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VOL. XVI, No. 4 WASHINGTON APRIL, 1905

THE NATIONAL GEOGRAPHIC MAGAZINE

A REVELATION OF THE FILIPINOS

THE SURPRISING AND EXCEEDINGLY GRATIFYING CONDITION OF THEIR EDUCATION, INTELLIGENCE, AND ABILITY REVEALED BY THE FIRST CENSUS OF THE PHILIPPINE ISLANDS, AND THE UNEXPECTED MAGNITUDE OF THEIR RESOURCES AND POSSIBILITY FOR DEVELOPMENT

The following article is a summary of the report of the Census of the Philippine Islands by General J. P. Sanger, Director, and Messrs Henry Gannett and Victor H. Olmstead, Assistant Directors, which is published by the United States Bureau of the Census April 8. The report makes four large handsome volumes, comprising about 3,500 pages and containing 280 illustrations and 90 maps and colored diagrams. It gives the most comprehensive and able description of the people and geography of the islands that has yet appeared. Unfortunately the edition was limited from lack of funds to 4,000 copies, which were exhausted even before publication. Through the courtesy of General J. P. Sanger, Director, the National Geographic Magazine republishes the principal results of the Census, and also a large number of the exceedingly beautiful pictures with which the report is illustrated.

THE details of the census of the Philippine Islands will undoubtedly surprise us all, for the report shows that the condition of the Filipinos is much superior from every point of view, in education, ambition, capacity, and possessions, than has been generally supposed. The census was taken in March, 1903, and is the first systematic collection of Filipino facts that has been made. As it was directed by conservative men, there can be no question that the statements reported are correct. The work was under the general supervision of General J. P. Sanger, Director, and Messrs Henry Gannett and Victor H. Olmstead, Assistant Directors, who had made such a success of the American censuses of Cuba and Porto Rico. These three gentlemen, with the coöperation of Governor Taft, have performed an achievement of which we may justly be proud. The word census in the Philippines was originally the synonym of everything repulsive, for all that it meant to the natives was a basis for more taxation. Through the tactful diplomacy of General Sanger, however, the feeling of the Filipinos was completely changed, and all of them seem

to have joined in competition to see who could most help the work. But though eager to help, the Filipinos had to be trained for the work, and this required more tact and time. Then no accurate maps were to be had, so that, everything considered, the census was a most difficult undertaking, and its completion within the allotted two years reflects great credit on the Directors.

The principal object of the census, as stated in the act of Congress, was to secure statistics of population and a general knowledge of social conditions as a basis for the establishment of a Philippine Legislature, which the law directs shall convene two years after the publication of the reports of the census. This Legislature is to consist of two houses—the Philippine Commission and the Philippine Assembly.

CENSUS WAS TAKEN BY FILIPINOS

The provincial governors were appointed supervisors of the census, and under their direction the enumeration was taken. They had assembled in Manila several months before the task was begun and were there instructed as to their duties.

In the execution of the field work and the preliminary examination of the schedules 7,627 persons were engaged, and of this number 118 were Americans, 1 Japanese, 6 Chinese, and 7,502 Filipinos; so that it may be said, in all sincerity, that it was a Filipino census of the Philippine Islands. Of the 7,502 natives employed 40 were women, who fully sustained the opinion of Archbishop Nozaleda that "the Filipino women are better than the men in every way."

This was the first attempt on the part of any tropical people in modern times to make an enumeration of themselves.

The margin of error in the number of civilized Filipinos, Chinese, and other foreigners probably does not exceed a fraction of 1 per cent. It was feared that quite a large number would try to avoid the enumeration; but except in a few instances there is no evidence of such an intention. On the contrary, several remote and obscure barrios or sitios which were not found in the original lists prepared by the supervisors, and which had been overlooked, apparently, sent runners to notify the census officials that they had not been enumerated. On account of the absence of well-defined boundaries between municipalities and barrios, some apprehension was felt as to a duplicate enumeration, but this was obviated by posting a printed notice of the enumeration on every house, boat, or other place occupied as a dwelling, which was not removed until the census was at an end.

INDUSTRIES AWAITING DEVELOPMENT

Among the changes to be made will be, probably, the introduction of the American mule and the substitution of American cattle for the Indian humped cattle. That cattle-raising may become a profitable industry there is no question, as there are large areas of grazing land suitable for cattle ranches, and horses, mules, and cattle thrive in the climate of the Philippines.

Statistics show that the great agricultural wealth of the country is in the cultivation of sugar, hemp, tobacco, and coffee. Tobacco of fine quality is raised in the provinces of Cagayan and Isabela, and when carefully handled and thoroughly cured makes excellent cigars and cigarettes. The poverty of the average tobacco-grower, however, compels him to dispose of his crop before it is ready for use, and this, together with the crude methods observed in handling it, has given to Manila cigars a bad reputation among tobacco connoisseurs. When the tobacco-growers are able to hold their crops long enough and to resort to careful and scientific methods in its cultivation and preparation, the best Manila

cigars will compare favorably with the best Habana cigars. No estimate can be made at this time of the productiveness of the islands in hemp, inasmuch as it grows wild as well as under cultivation, and there are many acres of wild hemp which have never been touched; moreover, the methods employed in stripping hemp are of the crudest kind. This valuable crop and its full development merely await the influence of American invention and capital.

As compared with the total area of the islands, the amount of land under cultivation is small, but it should be remembered that the islands of Mindoro, Paragua, and Mindanao, which are among the largest of the group, are very little cultivated. Again, the methods followed, including the implements in use, are most crude, and something better must be substituted before the yield will equal the production of intelligent American farmers. Rotation in the crops, irrigation, and the use of fertilizers are almost unknown, nature receiving but little aid from artificial means.*

THE HEALTHFULNESS OF THE ISLANDS

No better illustration of the salubrity and healthfulness of the climate of the Philippine Islands could be given than that afforded by the health report of the army, both in war and peace. This shows conclusively that, under the intelligent management of our medical staff and the care bestowed on the soldiers by their regimental and company officers, men who are in good health when they arrive in the Philippines, and who observe the health rules laid down for their guidance, are, on the whole, as nearly immune from disease as within the territory of the United States. The statistics of the Surgeon General of the Army show that for the calendar year 1902 the number of soldiers constantly sick in the United States was 5.33 per cent of the command, and in 1903, 4.85 per cent; in the Philippines, for the same period, the percentage of constantly sick was 6.88 and 6.62, respectively, an average difference of 1.66 per cent.

That long exposure to the climate is enervating there can be no doubt, but the effect is easily avoided by periodical changes to a colder climate. This has been conclusively proven by the old Scotch, English, and other white residents of the islands, who, after a residence of over forty years, broken by such removals, enjoy excellent health. Formerly it was necessary to take a sea voyage in order to find relief, but with the completion of the electric railroad at Baguio, in the province of Benguet, this will no longer be needful, as the climate at that altitude will afford the requisite change.

TEACHING THE PEOPLE TO TAKE CARE OF THEIR HEALTH

Nothing that has been done by the Insular government deserves more commendation or reflects more credit on the administration than the measures taken to arrest and stamp out cholera, bubonic plague, and smallpox, to prevent the spread of leprosy, and to teach the natives how to guard against the dread diseases, tuberculosis, dysentery, and malarial fever. Only those acquainted with the native character and the insanitary conditions formerly prevailing everywhere, and particularly in Manila, can fully appreciate what has been done or that many years must pass before a majority of the native population will recognize the benefit of medical treatment and adopt sanitary rules. On the other hand, a large part of the population has already been benefited, and the experience thus gained is sure to be influential.

A serious feature in the mortality

*See "Progress in the Philippines," pp. 116–118, NATIONAL GEOGRAPHIC MAGAZINE, March, 1905.

among the natives is the large death rate among young children, and this can hardly be charged to the climate. As is well known, a large proportion of Filipino women are unable to nurse their children. As a result, the children begin to eat solid food long before they can digest it, and cholera infantum or convulsions end their lives. It is not difficult to predict the result when babies three or four months of age are given rice, and even bananas and mangoes, as a regular diet. A propaganda among the women, having for its object their instruction in the care of infants, is necessary, and it is understood has been attempted, but as yet has not become general.

As to the other data, the conspicuous facts are the entire absence of hospitals except in a few large cities, the existence of but twelve public libraries with 4,019 volumes; the great preponderance of churches, the small number of newspapers, and the comparatively small number of paupers and criminals.

THE LABOR PROBLEM

Labor and wages are burning questions, and a great deal has been said and written to demonstrate the lazy habits of the Filipinos and the worthless character of their manual labor. These strictures usually begin and end with unfavorable comparisons between Filipinos and Chinese, Americans, or other foreign populations. There are two sides to this very interesting and important question, and through the efforts of Governor Taft, the Philippine Commission, and the army it has been made perfectly plain to unprejudiced persons that the Filipino has greater intelligence and capacity than he has been given credit for.

What the Filipinos need in order to demonstrate their capacity as laborers is a fair opportunity under reasonable conditions, not as rivals of the Chinese or other people, but of each other, as is the rule in the United States, where, if Chinamen were permitted to enter unrestrictedly into competition with American labor, the value of wages would soon reduce the average American laborer to a state of poverty. If American labor cannot compete successfully with Chinese labor, it should not be expected of Filipino labor, and the Filipino should not be judged by such a standard. The so-called aversion of the Filipino to labor is not believed to be so entirely natural and instinctive as it is the result of causes to which very little reference is usually made. The habits of centuries, although artificially acquired, may well be mistaken in any people for natural traits. Thus, the abuse of the Filipinos throughout the first two hundred years of their experience with the early colonists, the assiduous and ceaseless efforts of their teachers to humble their pride, stifle their ambition, and impress upon them the dominant race, and the utter hopelessness of any kind of equality with them have no doubt had their effect in causing indifference, shiftlessness, and recklessness.

It may be said that the Filipinos are generally subordinate to lawful authority; that, under competent officers, they make excellent soldiers, and will in the course of time, it is believed, make good citizens. In fact, it is not too much to expect that, under the guidance of a free, just, and generous government, the establishment of more rapid and frequent means of communication, whereby they can be brought into more frequent contact with each other and with the general spread of education, the tribal distinctions which now exist will gradually disappear and the Filipinos will become a numerous and homogeneous English-speaking race, exceeding in intelligence and capacity all other people of the tropics.

DOCKING IMPROVEMENTS AT MANILA

The necessity for railroads connecting the rich agricultural regions with

the principal seaports is strongly emphasized by the great lack of docks and wharves throughout the islands. But few ports have docks at which an inter-island steamer can unload, and consequently every pound of freight and all passengers must be landed in small boats. One of the great drawbacks to the commerce of the Philippines has been the lack of dock facilities in the harbor of Manila for ocean-going ships. As a result, all vessels exceeding 15 feet draft must be lightered while lying at anchor some distance from the wharves and at considerable expense, more especially during the prevalence of the rainy season, when frequent typhoons interrupt the work of loading and unloading. This great obstacle to commerce will soon disappear, however, through the foresight of the Philippine Commission in making ample appropriations for the improvement of the Pasig River and the construction of an artificial harbor south of and adjoining the entrance to the river, with wharves capable of receiving and discharging at all seasons the largest sea-going vessels.

These improvements, which are to be completed by June 30, 1905, at a cost of about $4,000,000, will make Manila one of the great ports of the orient. Direct trade with the United States will then be the rule and not, as in the past, the exception. Manila will become a great mercantile depot and point of distribution of American and foreign merchandise of all kinds, destined for either the Philippines, China, or other points. The development of the abundant coal deposits in the Philippines, with the harbor improvements above referred to, will make Manila the chief coaling port in the East, surpassing Nagasaki in this respect, for the coal is of a quality equal to that of Japan and the coaling facilities of Manila will be much superior to those of the Japanese city. The commercial importance of Manila will become still more apparent when the Panama Canal is completed.

USE OF LIQUOR AND TOBACCO

The value of manufactured tobacco far exceeds any other industrial product, liquors and other beverages come next, and the two combined make 38.5 per cent of the value of all manufactured products. It should not be inferred from this that the Filipinos use these articles in excess, or that intemperance prevails, for, while nearly the entire population use liquor and tobacco in some form, they do so in great moderation. That the state of manufactures in the Philippines is what it is should occasion no surprise when we review the colonial system of government which generally prevailed for so many centuries. Under this system the Filipinos received but little encouragement to engage in industrial pursuits, and manufactures were not developed. The capital invested in manufactures exceeds $20,000,000.

IMPROVEMENTS IN THE LAW COURTS

Many important and salutary changes have been made by the Insular government. Stenographers and typewriters have been substituted for longhand writers in the courts. The Spanish colonial judiciary as it existed in the Philippines at the time of American occupation has been transformed into a system under which, says Chief Justice C. S. Arellano in the chapter on "The Judiciary," "we have a more simple code of civil and criminal procedure, following American methods, and an avoidance of the great delays which previously existed in the disposal of cases and criminals. In fact, delay is now more a question of sufficient number of judges than, as formerly, of voluminous and abstruse forms and of petty interlocutory appeals or other means of obstructing and arresting the course of justice."

The successive steps taken in changing the judicial system are of great interest, and illustrate in a conspicuous manner the adaptability of American legal institutions to the greatest of our new possessions.

Until January 1, 1906, Spanish will be the official language of all the courts, and after that English; meanwhile the supreme court and courts of first instance may in any case order a duplicate record of a case in the English language whenever, in the opinion of the court, the public convenience and the interest of the litigant parties will be promoted thereby. This is a fortunate settlement of a difficult question, and is equally fair to the English and Spanish speaking lawyers, besides preventing the resentment which would have followed had English been forcibly imposed on the people by operation of law.

EXPLORATION IS IN PROGRESS

Although Spain had jurisdiction over these islands for more than three centuries, little topographic information had been acquired regarding them, except such as was of a very general character. The coasts were badly mapped and in many places are now known to have been miles out of position. The coast charts, made from Spanish surveys, are so inaccurate as to be, on the whole, worse than useless to mariners, while of the interior of the larger islands little was known except what could be seen from the sea. Many maps of the archipelago have been published embodying the knowledge which had been acquired both during the days of the Spanish jurisdiction and in more recent times, but they are all very much of the same character.

Since American occupation much exploration and surveying have been done. Wherever military operations have extended, surveys have been made and maps prepared. In this way there have been produced maps covering a large part of Luzon, including the entire central portion of that island. Maps have been made of several of the Visayan Islands. The operations against the Malanao Moros have resulted in a map of Lake Lanao and its surroundings in Mindanao. The island of Jolo has been mapped.

The great work of charting the coasts and harbors of the Philippines was commenced three years ago by the United States Coast and Geodetic Survey, working in coöperation with the Philippine government, and progress is being made in the preparation of accurate and trustworthy charts of these dangerous coasts.

THE ISLANDS ARE OF VOLCANIC ORIGIN

The entire archipelago is mountainous or hilly. In the islands of Luzon, Negros, and Mindanao are broad plains and level valleys, but in general there is comparatively little level land. Tropic vegetation extends high up on the slopes and covers the lesser mountains and hills. Thus the ruggedness of a mountain region is softened into rounded outlines. The mountain scenery is everywhere beautiful, but rarely appeals to the eye with the element of grandeur.

The archipelago is, for the most part, of volcanic origin. It contains twelve volcanoes which have been in eruption within historic times, and scores which are extinct or quiescent. Most of the surface of the islands is floored with volcanic rocks and ash. In northern Luzon there are, however, large areas underlain by metamorphic rocks, granites, schists, and the like; and several islands, notably Cebu and Bohol, are covered with a veneer of coral limestone. The occurrence of these coral limestones of very recent disposition, at various places in the archipelago and at great altitudes, as in Benguet province at a height above sea of 5,000 feet, shows that great oscillations of level have occurred at times geologically very recent. Of these oscillations there are other abundant evidences in the existence of

lakes and marshes, waterfalls, and elevated beach lines, showing that the whole archipelago is in a condition of unrest.

THE COASTLINE IS GREATER THAN THAT OF THE UNITED STATES

The coasts of the archipelago are for the most part intricate; how intricate may be realized from the statement that these islands, with an area of about 115,000 square miles, have a coast line more than double the length of that of the main body of the United States. They are in part the result of volcanic action and in part the work of coral animals. Vulcanism has brought up the land from great depths in the form of thousands of large and small islands, fringed with coral reefs, some of which have been brought to the surface, while others lie immediately below it.

With such a broken coast, harbors of one sort or another are numerous. Most of them are of sufficient depth to admit large vessels, but are so difficult and dangerous of entrance, owing to the reefs which obstruct them and to the absence of lights, channel buoys, range stakes, and accurate charts, as to be of little value except to those who know them well. Owing to the alternating character of the winds which prevail throughout most of the archipelago, the northeast trade wind from October to June and the southwest wind during the rest of the year, many, if not most, of the harbors furnish shelter during only a part of the year.

All the principal islands and groups of islands have harbors for the largest vessels in all kinds of weather at all seasons, except the island of Bohol, which has no harbors, and there are many harbors which are safe only according to the season of the year.

THE EQUATORIAL CURRENT, TIDES, AND RIVERS

The dominating feature of the currents in the islands is the great equatorial current, which, sweeping across the Pacific from east to west in a broad belt, divides east of these islands. The northern portion, which farther north is known as the Japan current, sends numerous streams through the passages among the islands, thus forming a complicated system of currents almost impossible of description. The system is still further complicated by surface drifts, set in motion by the southwest wind in the summer and fall, making currents in various directions among the islands at different times of the year.

Tides in the archipelago are exceedingly irregular, differing greatly in different places, owing to the directions in which tidal waves move, and differing also greatly at different times of the month. For details regarding them reference should be made to the sailing directions prepared by the United States Coast and Geodetic Survey.

There are few rivers in the Philippine Islands, the Cagayan of northern Luzon, the Rio Grande de Mindanao, and the Augusan of Mindanao being the only three which can be classed as large streams. These, which are in approximately the same class, have a length exceeding 200 miles, and owing to the abundance of precipitation carry large volumes of water even during the low stage. The Pampanga River of central Luzon is nearly as large, and this is followed in magnitude by the Ango of central Luzon and the Arbra in the northern part of the same island. Probably there are no other streams in the islands which exceed 100 miles in length.

3,141 ISLANDS

Mr G. R. Putnam, in charge of the United States Coast and Geodetic Survey in the Philippine Islands, at the instance of the Director of the Census, made a count and measurement of all the islands and islets comprised in this archipelago, including everything, however small, which at high tide appeared as a separate island. The total number

thus enumerated by him was 3,141, and are listed in tables; of these 1,668 were listed by name, while 1,473 are, so far as known, without names. The number found is nearly twice as great as heretofore known; as more accurate charts of the archipelago are made, it is believed the number will be increased.

AREA OF THE ISLANDS

The total area of the islands is 115,026 square miles. There are two islands with areas exceeding 10,000 square miles each, namely, Luzon with 40,969 and Mindanao with 36,292. There are 9 islands each of which has an area of more than 1,000 square miles and less than 10,000. There are 20 between 100 and 1,000 square miles, 73 between 10 and 100 square miles, and 262 between 1 and 10 square miles. The remaining number, 2,775, or seven-eighths of all, have areas less than a square mile each.

VERY FEW MAMMALIA

The fauna most closely resembles that of the neighboring Malayan Islands, but at the same time shows certain remarkable differences from them. Thus there are very few mammalia in comparison with the number in Borneo and Java. There are but two species of monkeys, but three representatives of the carnivora, and of the deer tribe but six species. Small rodents are very scarce except in the large seaports, while, on the other hand, there are at least 30 species of bats. There are no large mammalia except the carabao, a few of which are still found wild, and the timarau or antelope buffalo of Mindoro. Altogether there are but 23 species of terrestrial mammals known on the islands.

Not only does the fauna of the Philippine Islands differ in certain marked respects from that of the adjacent islands of the East India archipelago, but the different islands of the Philippines differ among themselves in their fauna. The timarau is found only in Mindoro, porcupines are found only in Paragua and in the Calamianes Islands, and there are numerous species of animals which have been found only in certain parts of the archipelago.

GREAT VARIETY OF BIRDS

Such peculiarities of distribution of land animals may be explained easily, but it is not so easy to explain similar facts concerning the distribution of birds. Paragua and the Calamianes Islands possess several species which are not found elsewhere in the archipelago, but which are similar to species found in Borneo. Of the 286 species of birds found in Luzon 51 at least are not known to occur outside of that island. The avifauna of Samar and Leyte contains 22 species not found elsewhere, and similarly in Mindanao and Basilan are found 17 species peculiar to those islands. One of the most striking cases, however, is that of Cebu, which, although a near neighbor to Negros on one side and Bohol on the other, contains 9 species of birds not found elsewhere. The total number of species of land birds known is a little over 300, a larger number than in Java; of these many are game birds, such as snipe, plover, quail, duck, and geese. In spite of this richness of species there are many important genera found in the other Malay Islands which are not represented here, while on the other hand more than two-thirds of the Philippine species are peculiar to that group of islands. These facts strongly emphasize the isolation of the archipelago.

THE FORESTS

The forests of the archipelago are of wide extent and embrace a great variety of woods, many of them highly valuable. Woods suitable for the finest cabinet-work, for veneering, and for artistic purposes, and also woods adapted to ship or house building and other economic uses, are found in great abundance. There

are also many gutta-percha, India-rubber, and other gum-producing trees, dye and medicinal woods and plants, and other forest growths, most of which are mentioned in connection with the subject of agriculture. The enormous extent and wide range of usefulness of Philippine forest products will render them, under the careful management and conservation provided for by law, second only to agricultural products as a source of insular wealth and prosperity.

The number of different kinds of trees is not known, but the report of the chief of the Philippine Forestry Bureau for 1902 shows that 747 species of wood were brought to the market during the year ending June 30, 1902. The number of useful woods is undoubtedly larger than the number marketed, and in addition the forests contain many trees the woods of which are not used for domestic or economic purposes.

Summarizing the information at hand, it appears that approximately 70 per cent of the area of the archipelago, or 80,000 square miles, is forested. The forested area was estimated by Fernando Castro in 1890 at about 48,112,920 acres, or 75,150 square miles. This estimate includes all the woodland, public and private, and amounts to 66 per cent of the total area. An official estimate made in 1876 gave an area of about 80,000 square miles.

WEALTH OF TIMBER

Little is known concerning the stand of timber per acre. The Forestry Bureau has made careful examinations at several places in the islands and has measured sample acres containing more than 10,000 cubic feet, or 100,000 board feet, per acre, and it reports large areas of virgin forest, of which the average stand is 7,000 cubic feet per acre. It is probable, however, that this is much above the average of the wooded area of the islands; still enough is known to hazard the conjecture that the average stand of timber in the islands may exceed 2,000 cubic feet per acre.

If this estimate of average stand is not excessive, the amount of timber in the archipelago is in the neighborhood of 1,000,000 million feet B. M., or more than double the amount in the States of Oregon and Washington together.

The stumpage value of the above timber to the government, at an average of three cents gold per cubic foot, is not far from three billion dollars, and it is easy to foresee that when the lumber industry reaches any considerable magnitude the receipts from it will form no inconsiderable part of the income of the government.

The islands are well supplied with streams having sufficient volume of water for floating logs. Most of these can be made good driving streams by a little work in the way of removing snags and sand bars. It must be remembered, however, that most of the timber in the Philippines is too heavy to float, and that the logs must be buoyed by bamboo poles. It may be discovered, when logging operations on a large scale are instituted, that logging railways will be more economical than driving the logs in the streams.

Logging is carried on at present on a small scale and with very primitive appliances. The logs are dragged out of the woods by carabaos to the railroad or to the streams, down which they are floated by the aid of the bamboo.

EXCELLENT COAL IN ABUNDANCE

Unless all indications are deceptive, the mineral wealth of the Philippine Islands is very great. Coal, of Tertiary age, of widely differing qualities, from lignite so soft and impure as to be practically worthless up to that equal in steam capacity to the best Japanese coal, is found scattered widely over the archipelago. Indeed, there are few provinces in which it has not been found. Many of the prospects which on the sur-

face appear almost worthless, owing to weathering, may, with depth, develop into a better quality. Gold also is very widely distributed, but thus far the veins and placers are poor and cannot be worked at a profit under present conditions of transportation and labor. Valuable deposits of copper and iron have been discovered, and in years past have been worked to a limited extent. Indications of asphaltum and petroleum have also been discovered, yet the mineral production of the islands was in 1903 practically nothing.

Coal is now being mined on Batan Island by the United States, which has leased a tract of coal land, for the supply of the army transports. Analyses show that it equals the best Japanese coal. Some is also mined by private parties.

It is altogether probable that in the near future the Philippine Islands will produce not only enough coal for their own supply, but may furnish coal for a large part of the commerce of the Pacific—a fact of prime importance in determining the course of that commerce.

Gold has been mined for centuries by the Igorots in Lepanto-Bontoc and Benguet, both from veins and placers. The total output has been small, as both classes of deposit are of low grade, but the Igorot is contented with low wages, especially if he is working for himself. Since American occupation this mountain range has been prospected by Americans and several hundred claims have been located. Little work has been done on them, and it is not believed that any deposits likely to prove profitable under present conditions of labor and transportation have been discovered.

APPARENTLY THE ISLANDS HAVE ENOUGH GOOD IRON ORES TO BUILD UP EXTENSIVE MANUFACTORIES

The deposit of iron ore in Angat and neighboring parts of Bulacan province appears to be extensive and rich. The ore is hematite and magnetite, principally the latter, and runs from 50 per cent to 63 per cent of metallic iron. The deposits extend over a belt 40 miles in length, varying greatly in breadth, lying on the west slope of the range which forms the eastern portion of the province. The ore was mined to a small extent during the Spanish domination, but without financial success. Little prospecting of the deposits in place has been made, the ore having been taken mainly from boulders on the surface. It was smelted with charcoal in small, crude blast furnaces.

This property has been examined and reported on by the mining bureau of the Insular government, and it appears probable that it may be made of great value to the archipelago, not only rendering it independent of the rest of the world in matter of pig iron, but it may build up extensive manufactories of iron and steel in these islands.

AGRICULTURAL PRODUCTS

The most important commercial product of the islands is abacá, or Manila hemp. This is indigenous to all provinces, but the fiber is unlike the hemp of other tropical countries, and is found only in the Philippine Islands. The value of the exportations of this product exceeded nineteen millions of dollars in 1902, or was two-thirds of the value of all exports. Nearly all of this material is shipped in the raw state to Europe and America for manufacture into cordage. Although a large area was devoted to the cultivation of hemp, much of the product that was exported was gathered wild.

The exportation of the dried kernel of the cocoanut, known as copra, is steadily increasing, and promises to become of great commercial importance. The value of the exports of copra and cocoanuts for 1902 was $2,701,783. The cocoanut palm flourishes luxuriously in

the Philippines, and when its products are systematically harvested it is a source of unfailing revenue and profit, supplying several by-products of commercial value.

The demand for rice throughout the archipelago far exceeds the domestic supply, and it will probably be necessary to continue to import it indefinitely, as the cultivation of hemp and other products is much more profitable. It is probable that the cultivation of cacao, from which the chocolate is derived, is likely to greatly increase and become one of the principal producing products of the islands, as the cacao of the Philippine Islands is superior to that grown anywhere else in the world.

THE POPULATION

The total population of the Philippine archipelago on March 2, 1903, was 7,635,426. Of this number 6,987,686 enjoyed a considerable degree of civilization, while the remainder, 647,740, consisted of wild people. There were 14,271 white, 8,135 being Americans and 42,097 yellow, of whom 921 were Japanese and 41,035 Chinese.

Of the eight civilized tribes the largest is that of the Visayans, who occupy most of the islands lying between Luzon and Mindanao, and form nearly one-half of the entire civilized population. Tagalogs occupy the provinces in the vicinity of Manila. They rank second, with a little more than one-fifth of the civilized people, and the Ilocanos rank third, with approximately one eighth.

The civilized people, with the exception of those of foreign birth, were practically all adherents of the Catholic Church, while of the peoples here classified as wild a large proportion, probably more than two-fifths, were Mohammedans in religion and were well known in the islands as Moros. The remaining three-fifths belonged to various tribes, differing from one another in degrees of barbarism. With the exception of the Negritos and the people of foreign birth, all the inhabitants of these islands are believed to be Malays.

The people of the Malay race constitute most of the inhabitants of the Malay peninsula, Java, Sumatra, Borneo, Celebes, and other associated islands, together with the Philippines. The total number of Malays is somewhere in the neighborhood of 40,000,000, of which over 28,000,000, or three-fourths, are found in Java, most of the remainder being in the Philippine Islands.

INCREASE IN POPULATION RAPID

At the beginning of the century Java had a little more than double the population of the Philippine archipelago. At the end of the century it had four times as many people.

The cause of this is not easy to determine. So far as known, the people of Java have been quite as subject to epidemics and diseases as the people of the Philippines, and there is no apparent reason for the more rapid growth.

The average annual rate of increase of the Philippines in the last half century has exceeded that of all the countries in the world, with the exception of the United States, Russia, and Japan, and has equaled that of Denmark. It was nearly three times as large as that of British India and Spain, nearly six times as large as that of France, and yet it was less than half as great as that of the United States.

SURPRISING ABILITY TO READ AND WRITE

Literacy among the people of the Philippines means the ability to read and write in any language—English, Spanish, or a Malay tongue. Since, in all probability, less than 10 per cent of the people of the islands can speak Spanish or English, the fact is unquestionable that the majority of the people reported as literate can read and write only the native tongues. This is a result of the

policy of the friars, who, from motives of their own, discouraged the learning of Spanish by the natives in ordor that they might act as intermediaries between the people and the civil authorities, and thus retain their influence over their charges.

A little less than one-third of the Filipino males of voting age are able to read and write.

There were 1,161,925 males who were able to read, constituting 47 per cent of all males 10 years of age and over. In other words, nearly one-half of the males could read. The number of females able to read was 1,049,509, or 42 per cent of all the females 10 years of age and over, a proportion considerably less than of males. Of all those who could read, males constituted 52.5 per cent and females 47.5 per cent.

The number of males who could both read and write was 735,564, or 29.8 per cent of the male population 10 years of age and over. The number of females who could both read and write was only a little more than one-third as great, being 267,024, or only 10.7 per cent of the females 10 years of age and over.

From the above it appears that, while nearly two-thirds of the males who were taught to read were taught to write, only about one-fourth of the females received an equal degree of education. Far less attention evidently has been paid to the education of women in the Philippines than to that of men. In the United States, Cuba, and Porto Rico literacy, by which is meant the ability to both read and write, was somewhat lower among females than among males—that is, a slightly larger proportion of those who were taught to read were also taught to write among males than among females—but the proportion there was only a fraction of that which prevailed in the Philippines.

The number of males reported as having received superior education was 59,020, or 2.4 per cent of those 10 years of age and over, and of the females 17,607, or seven-tenths of 1 per cent. Education among males was thus nearly three and a half times as great as among females.

The most literate tribe of the provinces is the Pampangan, 48.4 per cent of whose males of voting age were able to read and write. Next to the Pampangans are the Tagalogs, with 43.1 per cent, while the lowest are the Visayans, with only 32.2 per cent. Measured by the proportion having superior education, the Tagalogs are easily first, followed by the Pangasinanes and Zambalans, while the Visayans are still at the foot of the column.

THE FILIPINO IS AMBITIOUS TO LEARN

According to Hon. W. H. Taft, Secretary of War and formerly Governor of the Philippine Islands, the "90 per cent of the Christian Filipinos who do not speak Spanish are really Christians. They are capable of education, and they have no caste or arbitrary customs which prevent their development along the lines of Christian civilization. They are merely in a state of Christian pupilage; they are imitative; they are glad to be educated, glad to study some language other than their own, and glad to follow European and American ideals. They differ utterly in these respects from the East Indians, from the Malays of Java, and the Malays of the Straits Settlements, and thus make our problem different from and vastly easier than that of England and Holland."

EDUCATION IN THE PHILIPPINES

At the date of the census there were 2,962 schools in the archipelago, an average of three for each municipality. Of these, 55 per cent were public, about 33 per cent were private, and the remainder were under the control of the Roman Catholic Church. Of the total enrollment 6 per cent were reported for the primary schools. There are but two institutions devoted to higher education.

Five per cent of the civilized population of the Philippine Islands are enrolled in the schools. This proportion is only a little over one-fourth of that for the United States, but it represents practically a two-years' growth, as the school system may be said to have commenced with American occupation. One-sixth of all children of school age are enrolled, and three-fourths of that number are in the public schools. The attendance is 62.5 per cent of the enrollment as compared with 70 per cent in the United States. Boys constitute three-fifths of the pupils in the Philippines, while in the United States the schools are almost equally divided as to sex. Six thousand teachers are employed, four-fifths of whom are Filipinos, receiving an average annual salary of $125.02. The average public-school teacher has charge of 73 pupils, while in the United States the number is 36. Of the 3,461 school buildings, the majority of which are public, approximately one-third are built of durable materials. There is great need of additional school facilities and better buildings and equipment, and there is a general demand for an increase in the number of American teachers.

THE USE OF ENGLISH IN THE SCHOOLS

Although the study of English has met with some opposition, this opposition is diminishing. Eleven per cent of the pupils throughout the archipelago are reported as understanding the language, and this may be regarded as very satisfactory progress for the short space of two years. In Manila there are 21 night schools, with an enrollment of more than 4,000 adults, who are engaged in acquiring the English language. During the fiscal year ending June 30, 1903, about $1,500,000 were expended for educational purposes.*

* See "Educating the Filipinos," NATIONAL GEOGRAPHIC MAGAZINE, January, 1905, pp. 46–49.

DENSITY OF POPULATION

The density of population of the islands, as a whole, was 67 per square mile; that of Java was not less than 553, or more than eight times as great; that of the main body of the United States was 26, and that of the State of Indiana, which most nearly approached that of the Philippines, was 70 per square mile.

The most densely populated of the provinces, Ilocos Sur (on the west central coast of Luzon), had 398 inhabitants to a square mile. This was slightly exceeded by Rhode Island among the States, with 407, but in turn it exceeded Massachusetts, the second most densely populated, which had 349. Near this state in density were Cebu, with 337, and Pangasinan, with 334, to a square mile. These three were the only provinces with more than 300 inhabitants to a square mile.

Luzon is the largest island, with an area of more than 35 per cent of the whole archipelago and a population almost exactly one-half that of all. Mindanao, the second in rank, has an area of 31 per cent of that of the archipelago, while its population was only 7 per cent. These two islands together contain two-thirds of the area and 56 per cent of all the people.

As a rule, the density increases as the size of the island diminishes. This is due to the fact that the population in large part is a seaboard population, no less than 65 per cent of it living in municipalities bordering on the coast. Perhaps a fairer measure of the density of the population throughout a large part of the archipelago at least would be to divide the population by the length of the coast line. Nearly two-thirds of the Christian population, 65 per cent, live on or near the seacoast, and 35 per cent live inland.

THE PEOPLE LIVE IN VILLAGES

There are in the Philippine Islands about 13,400 barrios, which may be re-

garded as the equivalent of villages. The average size of a barrio or village in the Philippine Islands is 500 people.

CHARACTER OF THE HOUSES

The streets, as a rule, are not paved, and the roads generally are in poor condition, especially in the rainy season. For potable water, except in Manila, reliance is placed on wells and cisterns, and very little attention has ever been paid to sanitation. The houses of people of means are built of stone, brick, or wood, and their homes are provided with all available comforts. But it is safe to say that nine-tenths of the houses in the Philippines are built of bamboo, thatched with nipa, cogon, or other grasses, and are admirably adapted to the climate and to the condition of the occupants.

Owing to their long subjugation to friar and civil power, all parts of the islands have received a similar grade of culture. A town in the Cagayan Valley presents the same style of architecture, the same surrounding barrios, has the same kind of stores and similarly dressed people as a Christian municipality on the Island of Mindanao. In spite, however, of these facts the population has remained separated into practically the original tribes or groups, each speaking a different idiom and feeling strongly its separateness from the other.

THE TRIBES DO NOT MIX WITH EACH OTHER

An examination of the map showing the distribution of the tribes or peoples of the Philippine Islands shows that, generally speaking, the various tribes have kept very closely to themselves. To show how closely, it may be said that, after eliminating from consideration the municipalities in the provinces of Benguet and Lepanto-Bontoc and those of the comandancias, in 179 municipalities every male 21 years and over was of one Christian tribe, while 94 towns contained only one person different from the prevailing tribe. In 620 municipalities, or nearly two-thirds of all, at least 99 per cent of the men were of one tribe, and in 820 at least 90 per cent were of one tribe.

There is one tribe, and one only, which seems to possess a migratory, colonizing disposition; that is the Ilocano, and even they, whenever they have invaded the territory of other tribes, have mixed with them very little, forming villages by themselves.

THE AVERAGE AGE OF THE FILIPINO

Of the total native population of 6,931,548, 3,443,816 were males and 3,487,732 were females, the proportions between the sexes being 49.7 per cent males and 50.3 per cent females.

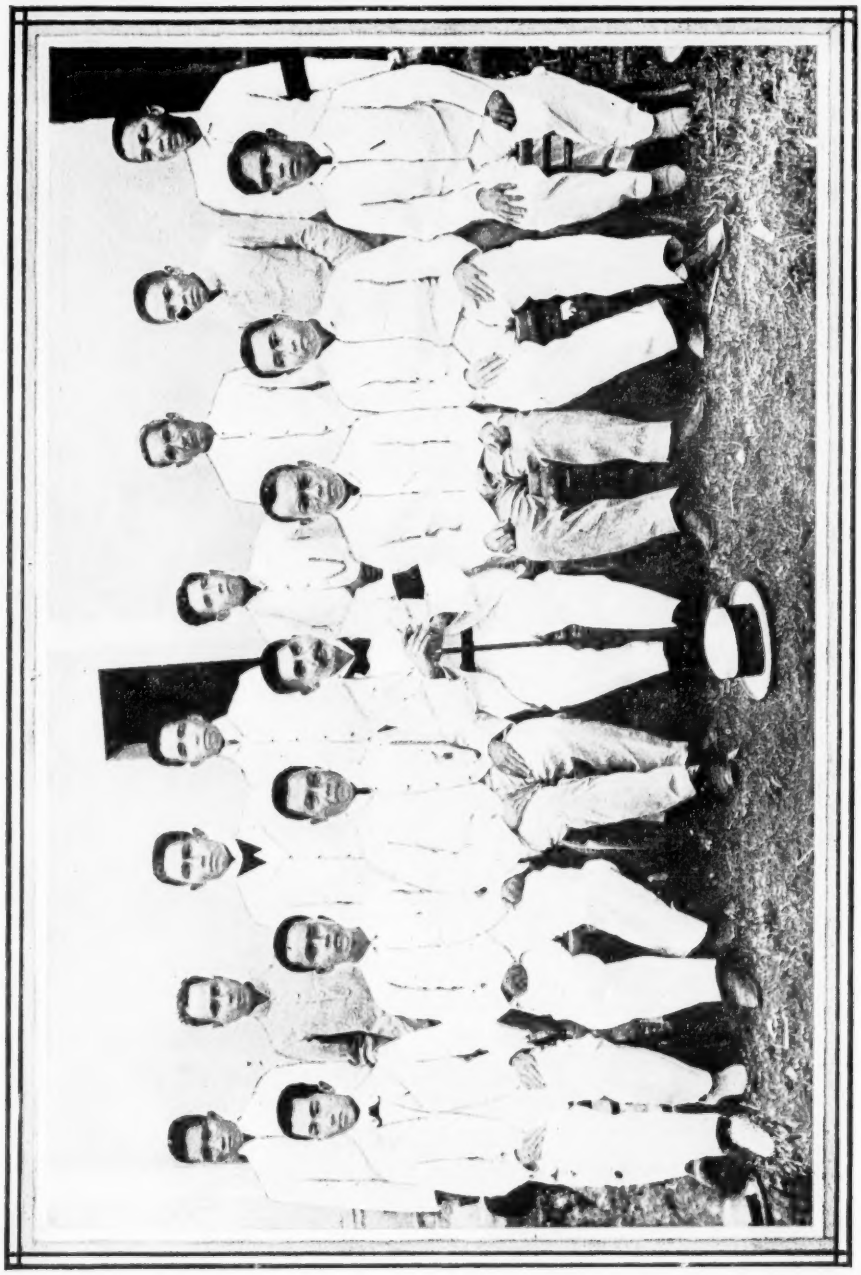
The average age of the people of the Philippine Islands is 23.9 years. This is 2.4 years less than the average age of the people of the United States, which is 26.3 years, and is greater than that of the negroes in the United States, 23.2 years. The average age of the brown people in the Philippines was 23.8 years, a trifle less than that of the total population. The average age of the Chinese was 33.4 years, much less than that of the same people in the United States, which was 40 years. The average age of the white people in the Philippines was 30.3 years.

THE FILIPINO FAMILY

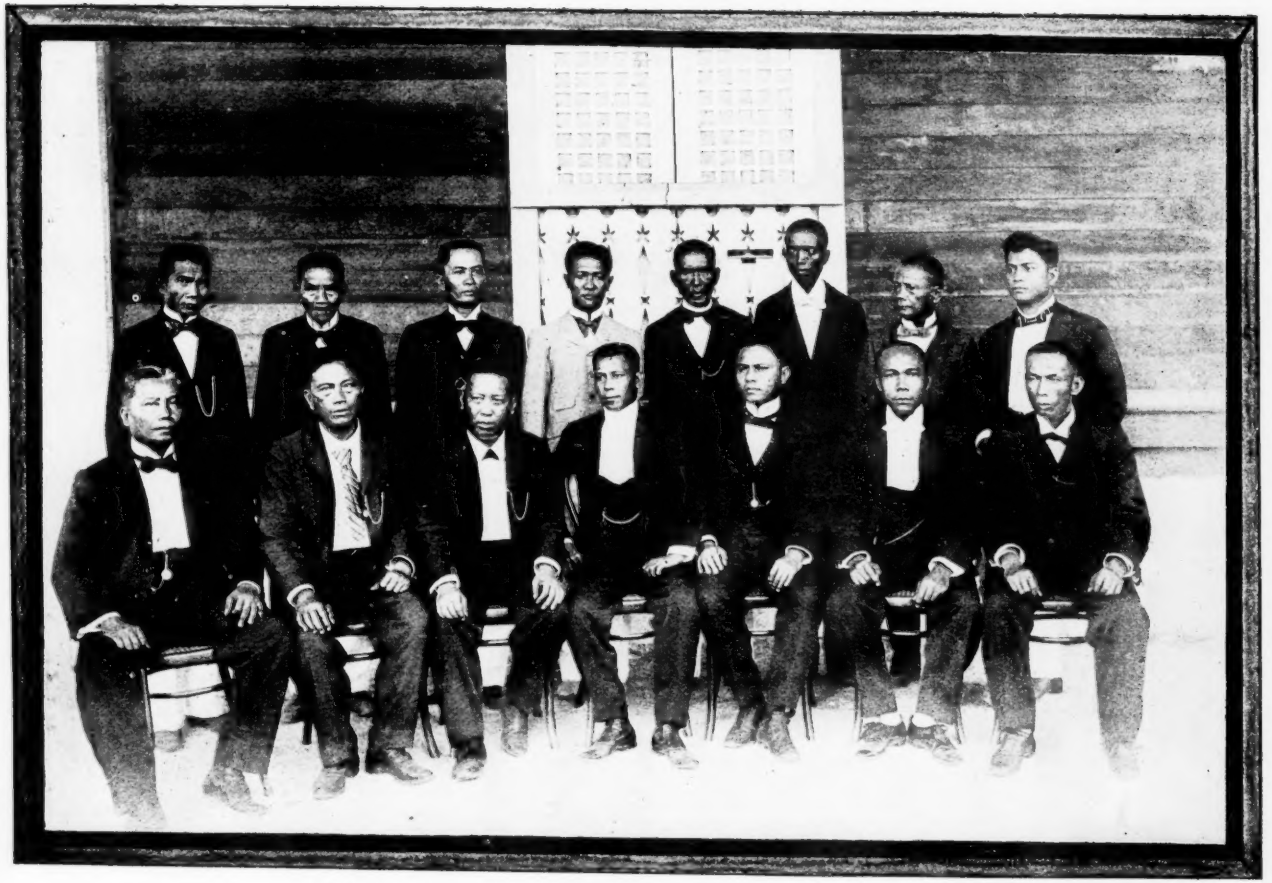
Although the Filipino families have been diminished in size by insurrections and cholera, the average family consists of 4.7 persons, and this is still about equal to that of the United States. The largest families are found among the Cagayan and Visayan tribes, and the smallest among the Ilocanos. About one-sixth of the population is comprised in families of 5 members. Families of 8, 9, and 10 persons form in each case a smaller proportion of the population than do families of similar size in the United States, Porto Rico, and Cuba;

SOME SUPERVISORS OF THE CENSUS.

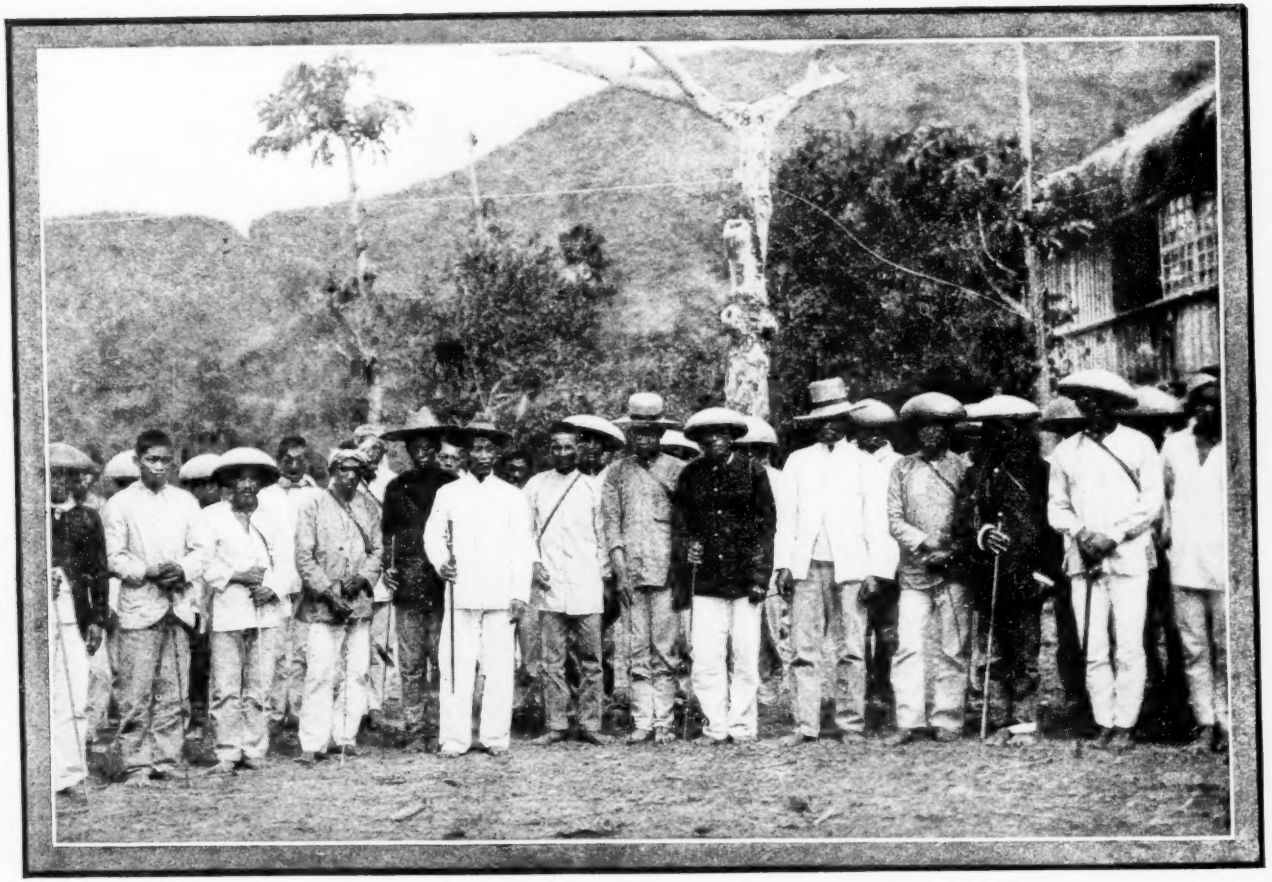
1. Gov. Potenciano Lesaca, Province of Zambales (Zambalan).
2. Gov. Francisco Dichoso, Province of Isabela (Cagayán).
3. Gov. Grazio Gonzaga, Province of Cagayán (Cagayán).
4. Gov. Julio Aggabili, Province of Ilocos Norte (Ilocano).
5. Gov. Juan Villamor, Province of Abra (Ilocano).
6. Gov. Mena Crisologo, Province of Ilocos Sur (Ilocano).
7. Gov. Ceferino Joven, Province of Pampanga (Pampangan)
8. Gov. Macario Fávila, Province of Pangasinán (Pangasinán).
9. Gov. Bernardino Monreal, Province of Sorsogón (Bicol).



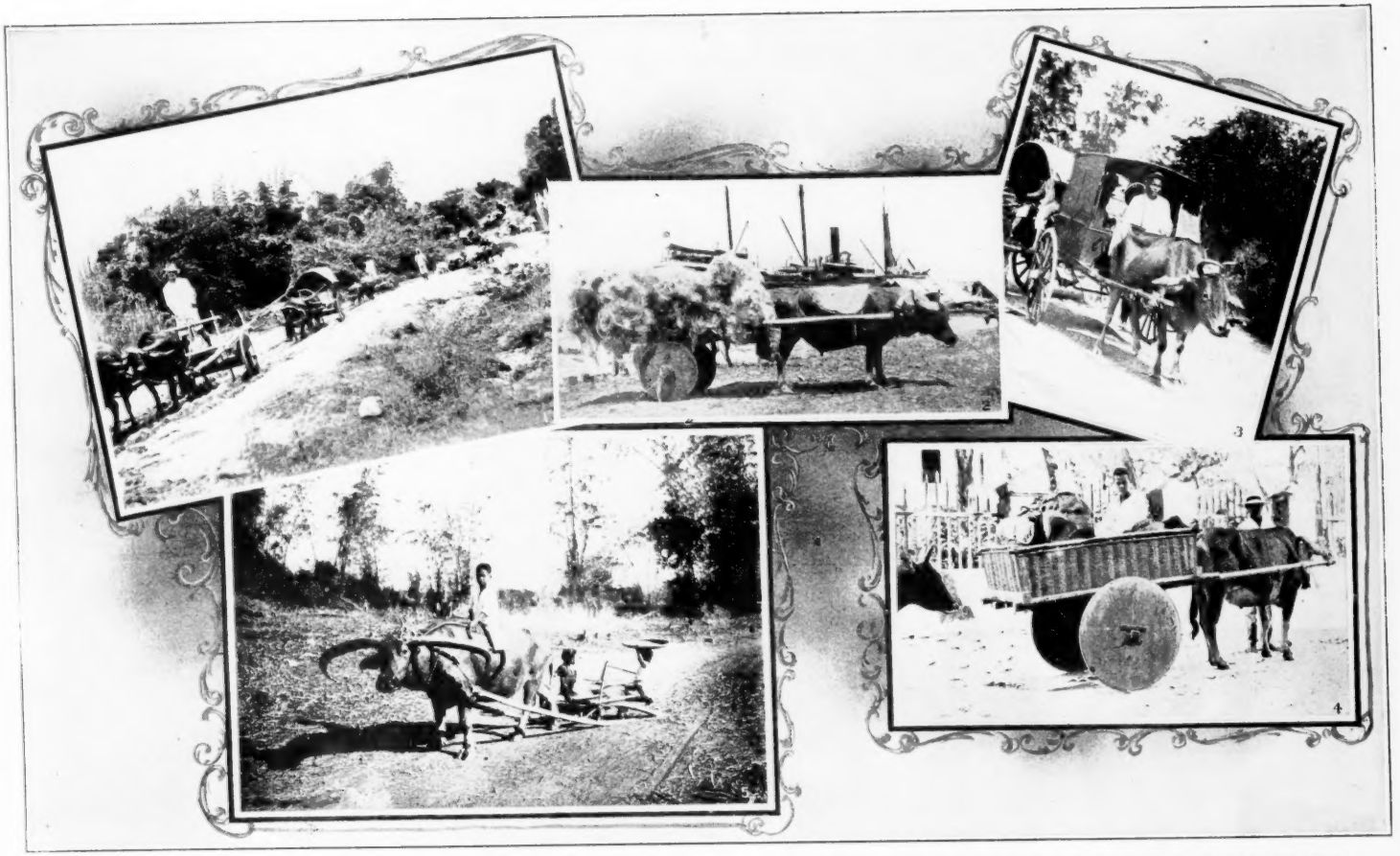
GOV-SUPERVISOR ORTEGA AND PRESIDENTES, PROVINCE OF LA UNIÓN (ILOCANOS).



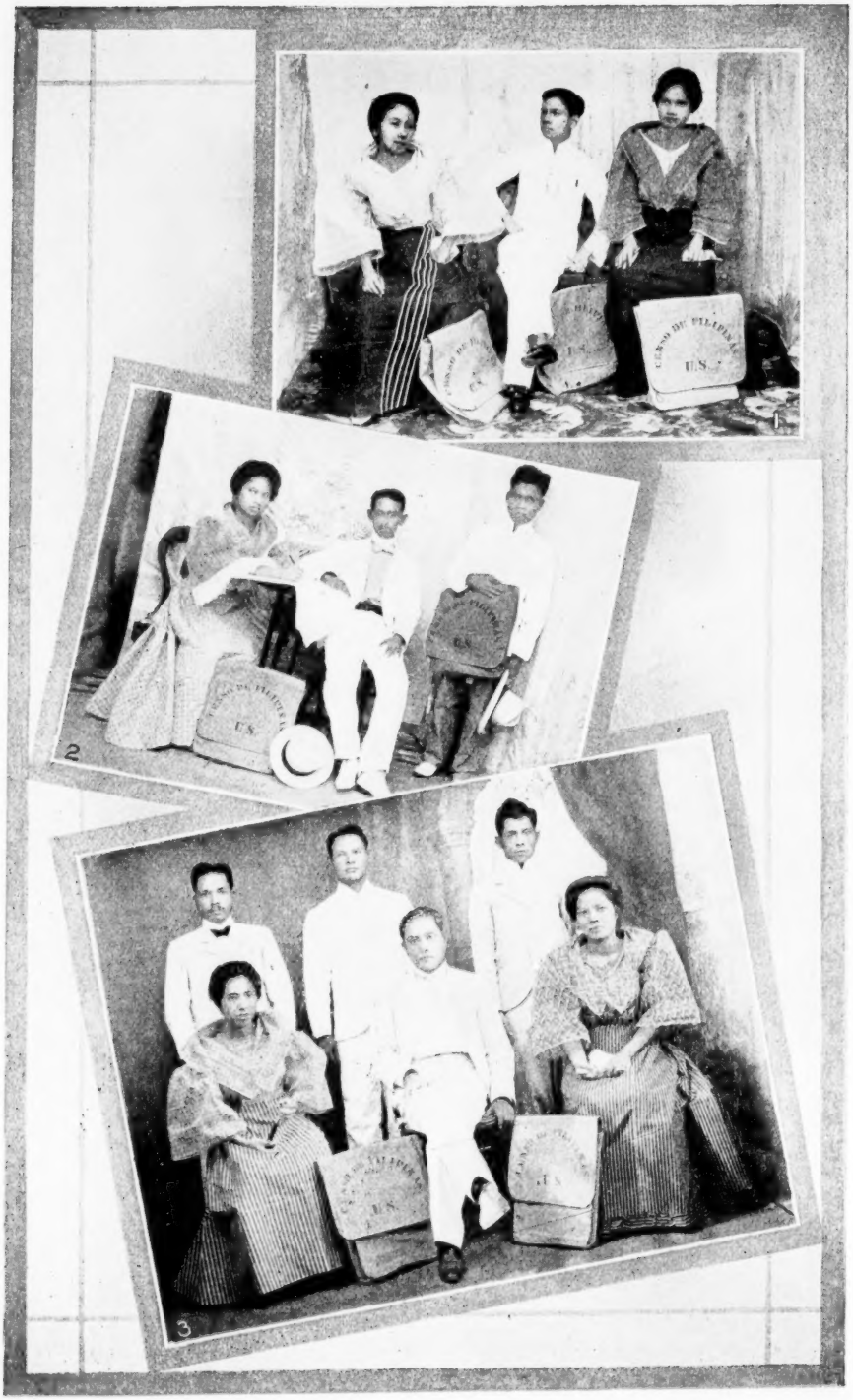
GOV-SUPERVISOR RAMOS AND PRESIDENTES, PROVINCE OF TÁRLAC (TAGÁLOGS).



ENUMERATORS, PROVINCE OF LEPANTO-BONTOC (IGOROTS).



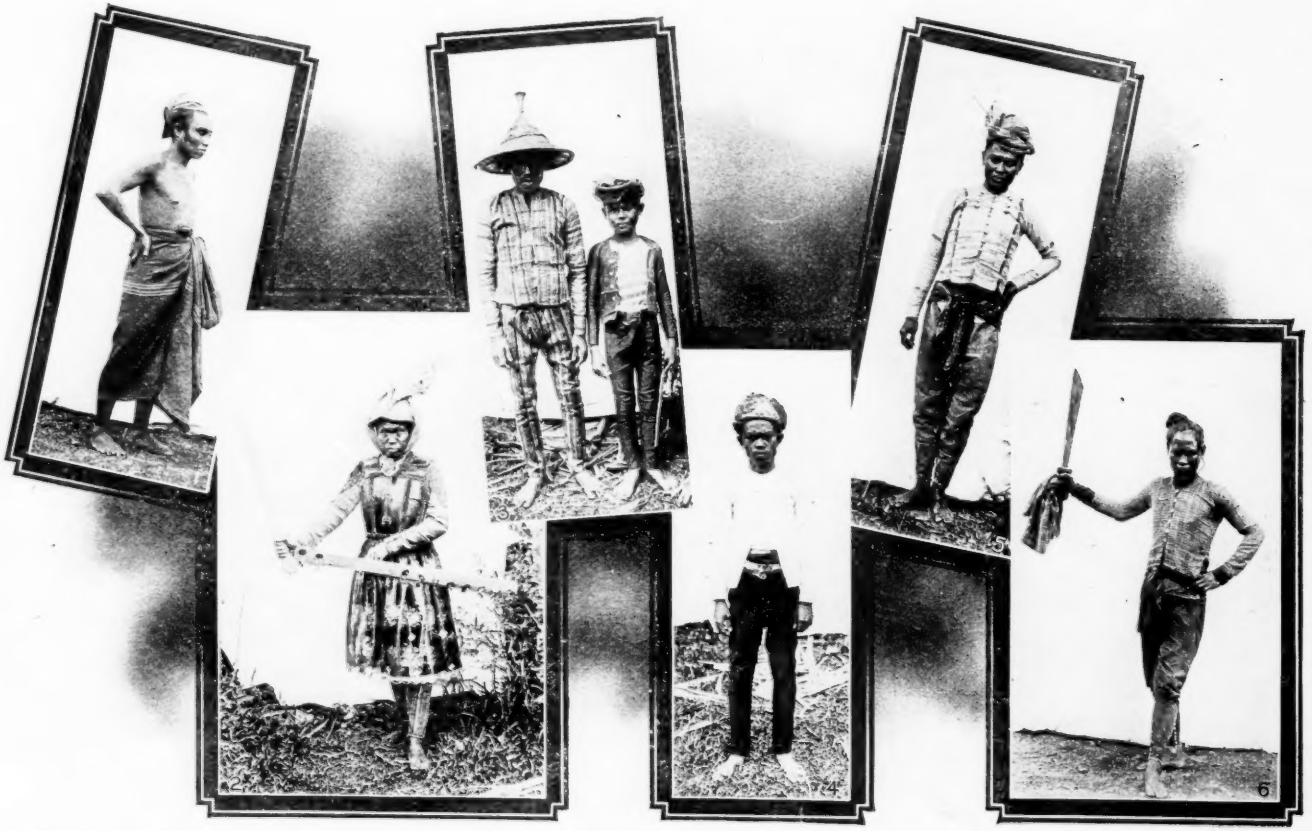
1. CARABAO CARTS. 2. HEMP FIBER AS BROUGHT TO MARKET. 3. TROTTING BULL OF PANAY. 4. TYPICAL WOODEN-WHEELED BULL CART. 5. CARABAO WITH SLED.



CENSUS ENUMERATORS, PROVINCE OF LA LAGUNA (TAGÁLOGS).

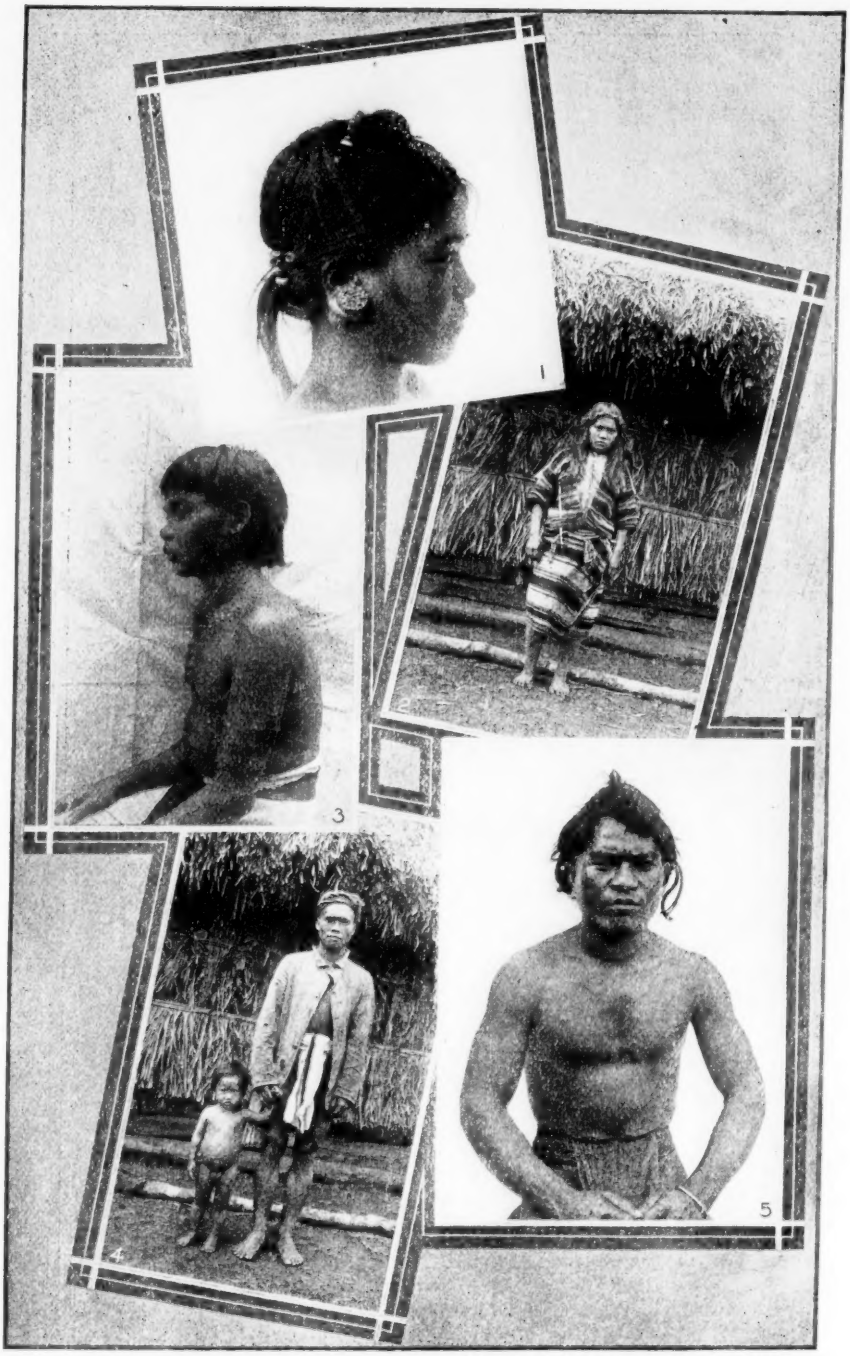
1, 5. COLLECTION OF DEAN C. WORCESTER.

1. MAGUINDANAO MORO—WIFE OF CHIEF ALI. 2. MORO WOMEN OF UPPER CLASS, ZAMBOANGA. 3. DATO AND BRIDE. 4. MOROS OF LAKE LANAO, MINDANAO. 5. JOLÓ MORO, ADULT MALE.



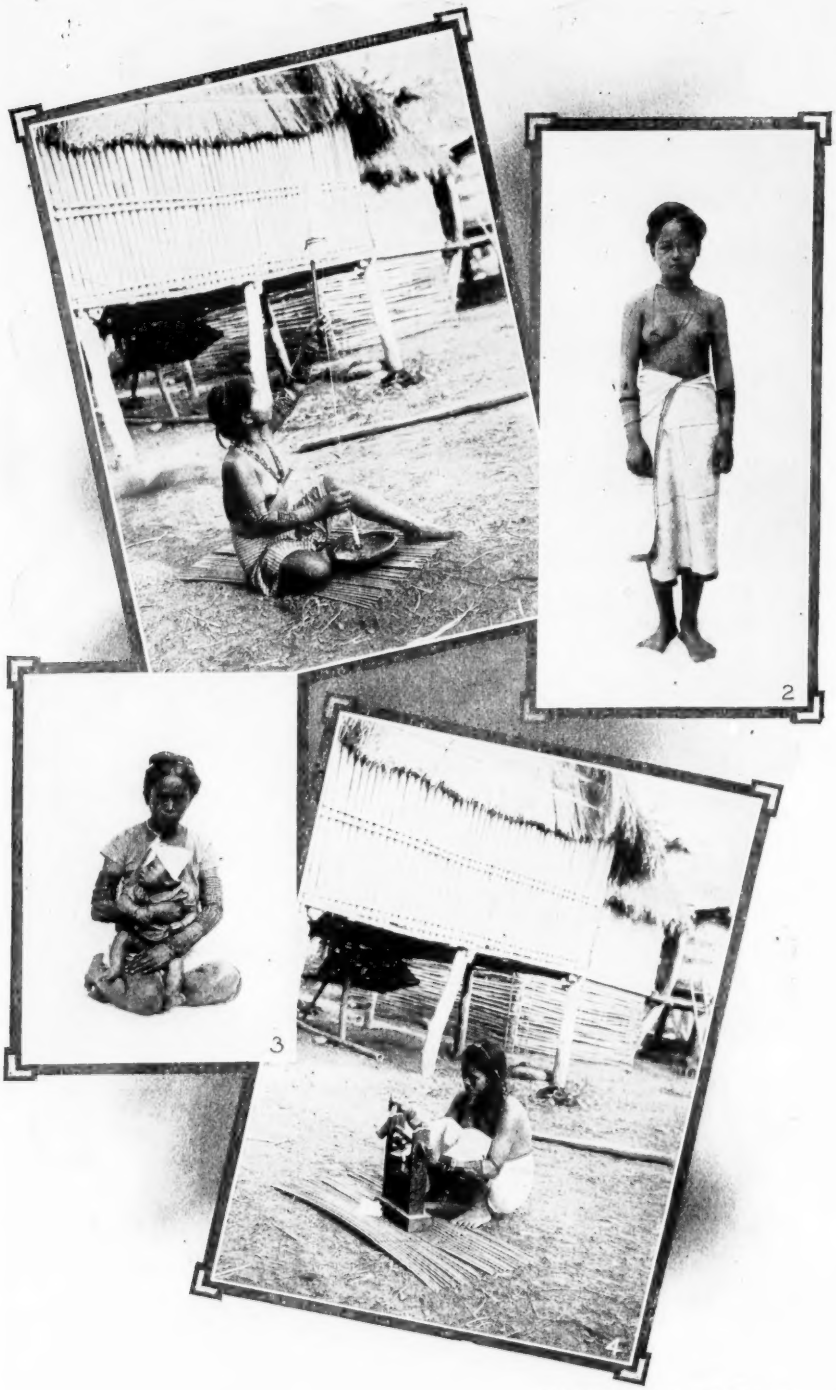
1. MORO SHOWING ONE WAY OF WEARING THE SARONG. 2. SANGUIL MORO WARRIOR IN BRASS HELMET AND CUIRASS. 3. SÁMAL MOROS, CHARACTERISTIC DRESS. 4. SÁMAL MORO OF ZAMBOANGA. 5. MALANAO MORO. 6. YAKAN MORO.

BAGOBOS, ISLAND OF MINDANAO.



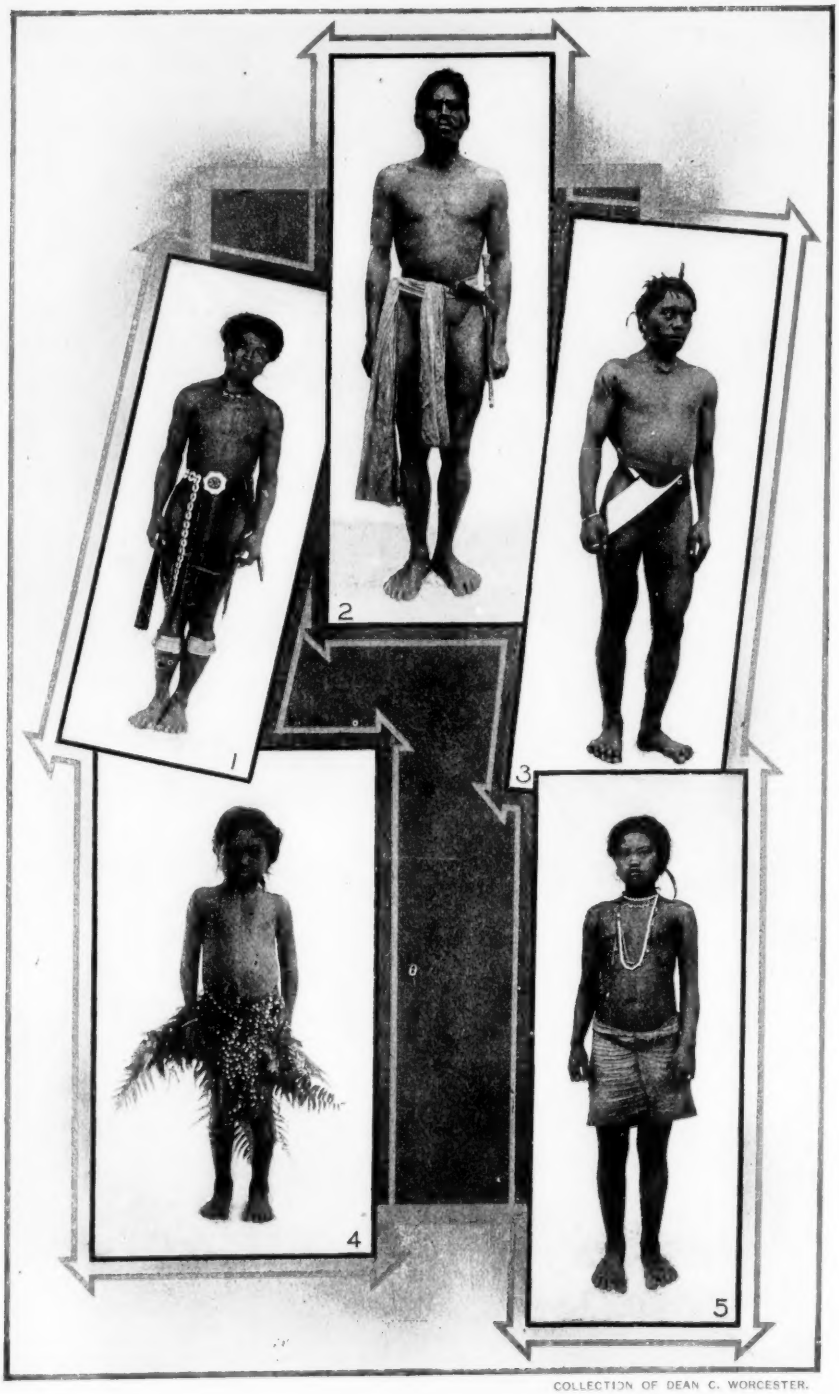
1, 3, 4, 5. COLLECTION OF DEAN C. WORCESTER.

1. IGOROT GIRL, SHOWING METHOD OF STRETCHING HOLE IN LOBE OF EAR. 2. IGOROT WOMAN, HAIR BOUND UP WITH GRASS CHAPLET. 3. IGOROT BOY. 4. IGOROT FATHER AND DAUGHTER. 5. IGOROT WARRIOR IN HIS PRIME.



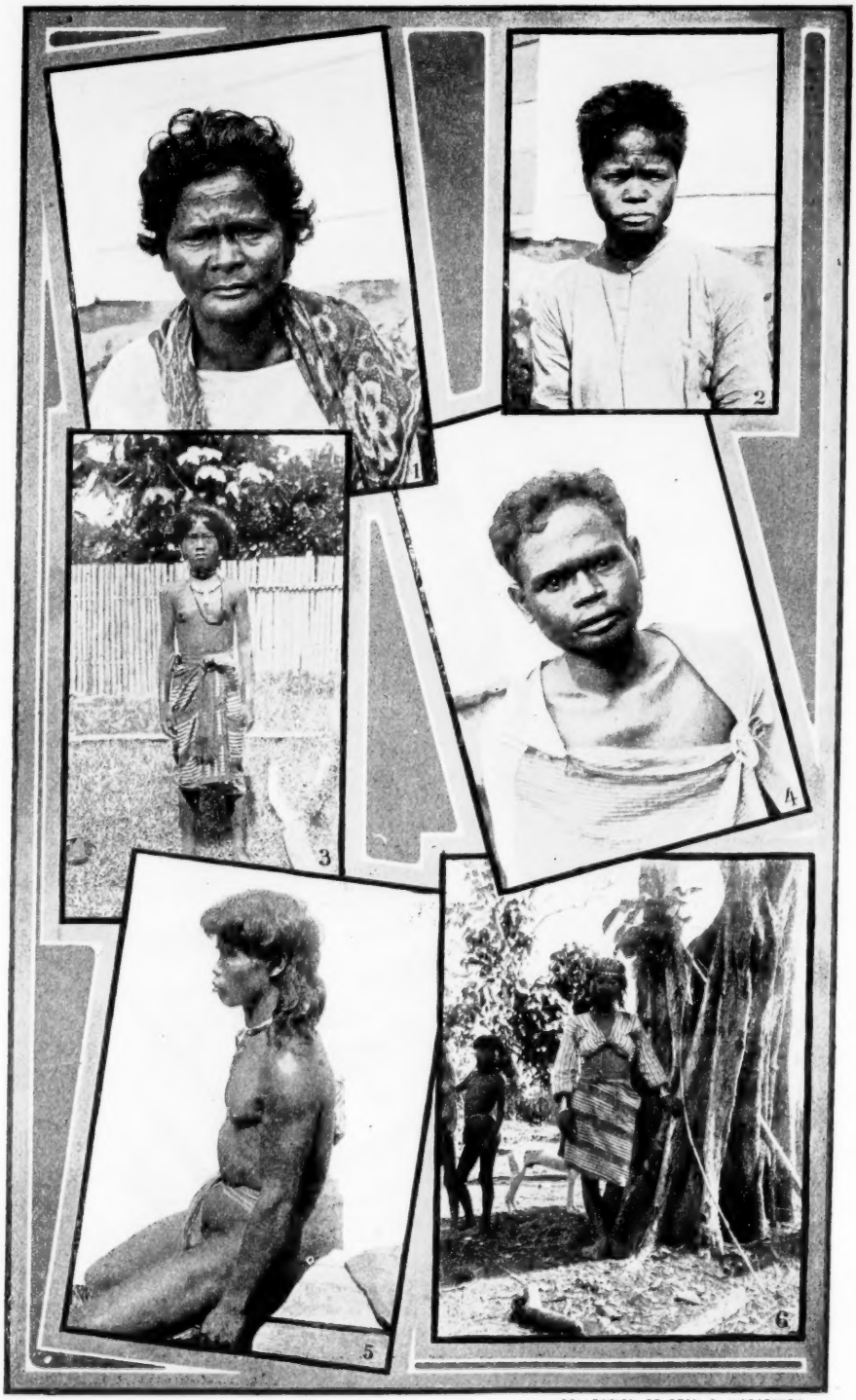
COLLECTION OF DEAN C. WORCESTER.

TINGUIANES.—1. GIRL SPINNING. 2. YOUNG WOMAN IN TYPICAL DRESS. 3. WOMAN AND CHILD. 4. GIRL OPERATING COTTON GIN.



COLLECTION OF DEAN C. WORCESTER.

1 MAYOYAO IGOROT, "HEADMAN" OF BANAUE. 2. IGOROT. 3. IGOROT HEAD-HUNTER, LEPANTO-BONTOC. 4. IGOROT GIRL IN FERN-LEAF COSTUME. 5. MAYOYAO IGOROT, YOUNG WOMAN.

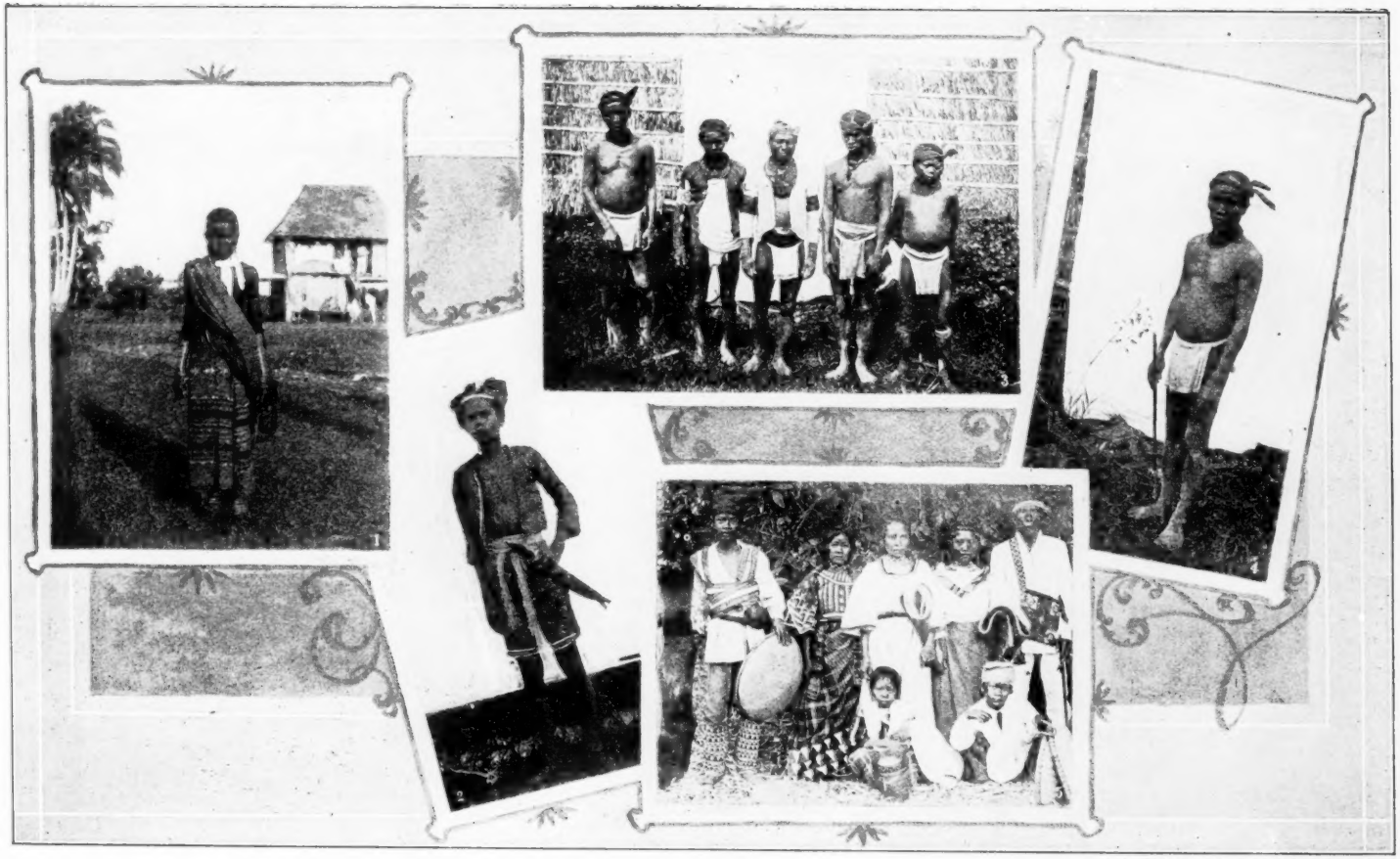


COLLECTION OF DEAN C. WORCESTER.

1. NATIVE WOMAN WITH NEGRITO BLOOD (REMONTADO). 2. YOUNG MAN (REMONTADO). 3. GIRL (REMONTADO). 4. NATIVE MAN WITH NEGRITO BLOOD (REMONTADO). 5. GIRL (GADDÁN). 6. WOMAN (GADDÁN).

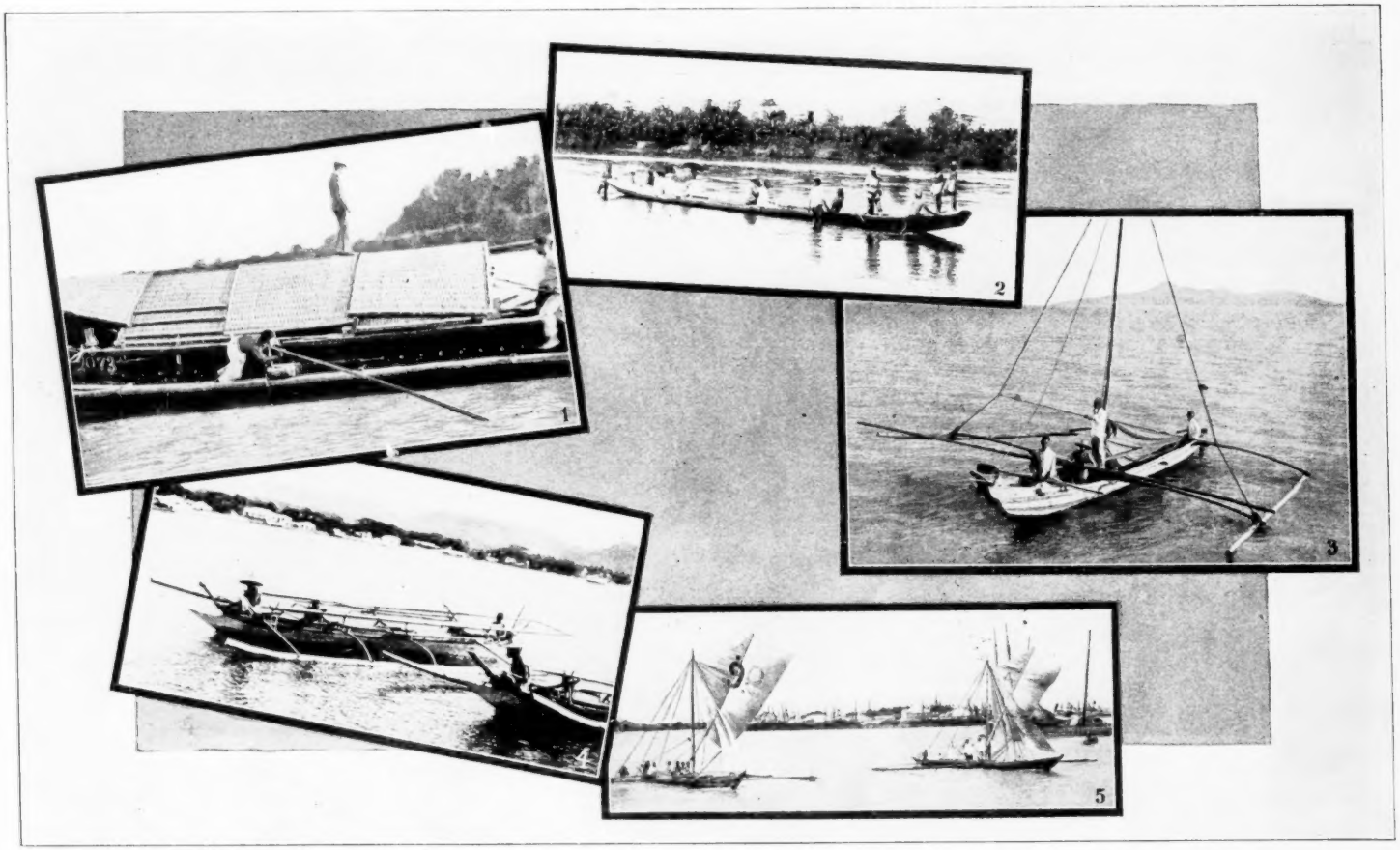
1, 2, 4. COLLECTION OF DEAN C. WORCESTER.

1. YOUNG NEGRITO WOMAN. 2. NEGRITOS MAKING FIRE BY RUBBING TWO PIECES OF BAMBOO TOGETHER. 3. GROUP OF NEGRITOS, PROVINCE OF ZAMBALES. 4. NEGRITO SHOWING FILED TEETH. 5. NEGRITOS IN THE FOREST, PROVINCE OF ISABELA.

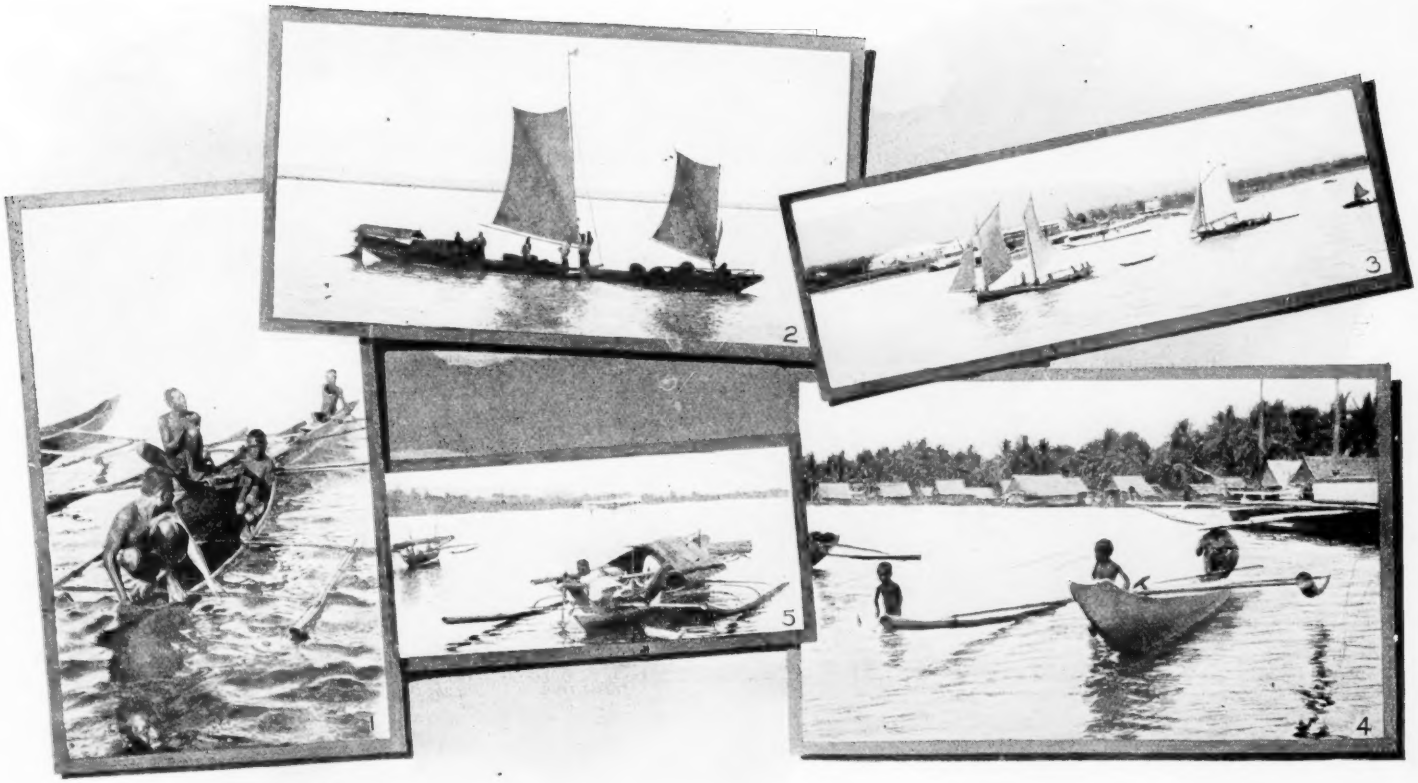


1, 2. COLLECTION OF DEAN C. WORCESTER.

1. TIRURAY DANCER AT COTTABATO. 2. ATA OF DÁVAO. 3. GROUP OF MANGYANS OF MINDORO. 4. MANGYAN, PROVINCE OF MINDORO. 5. MONTESES, PROVINCE OF MISAMIS.

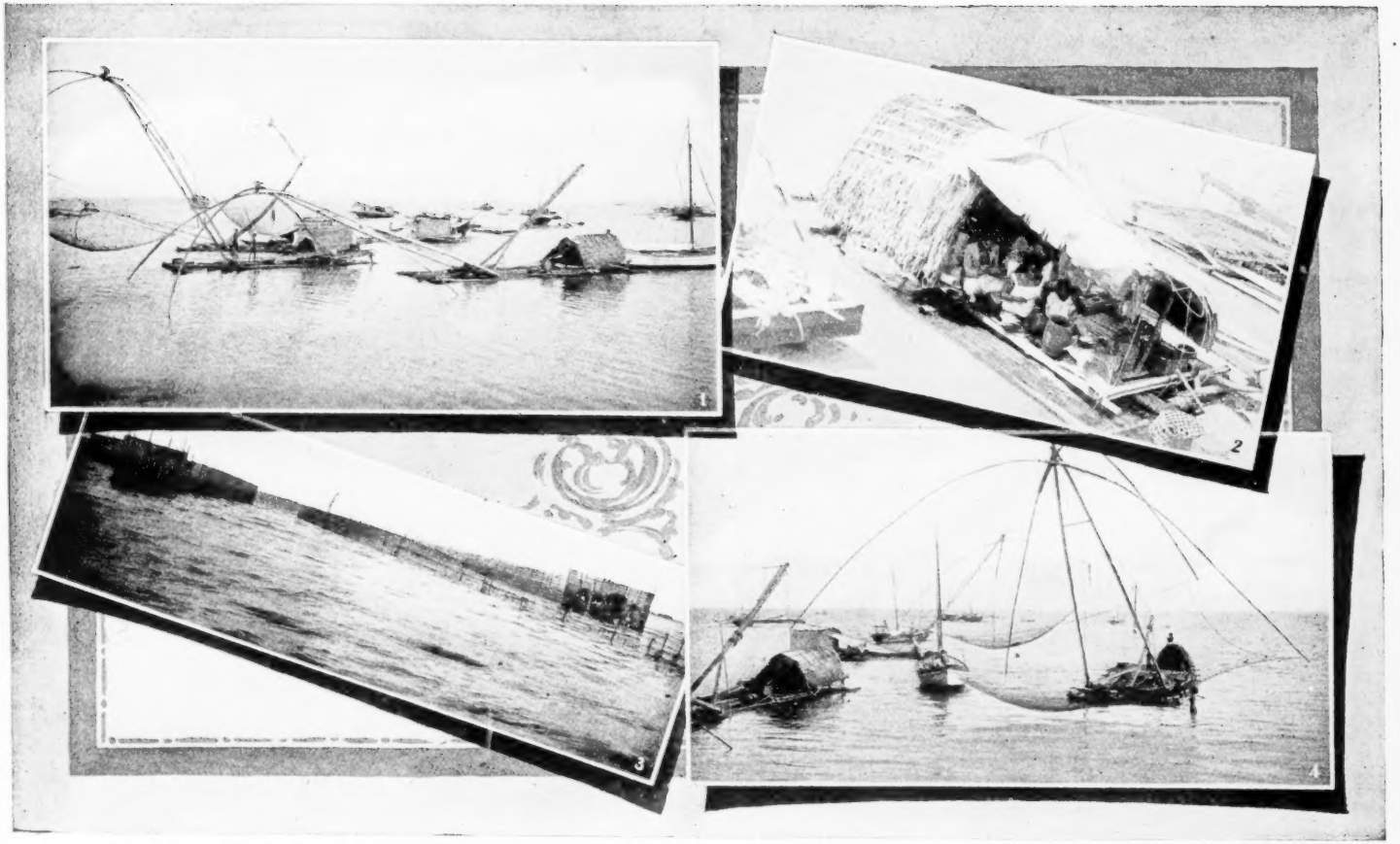


1. POLING A CASCO. 2. CANOES MADE FROM THE LOG OF A SINGLE TREE. 3. SINGLE-STICK OUTRIGGER, LAGUNA DE BAY, LUZÓN. 4. MORO VINTA. 5. OUTRIGGERED SAILING CRAFT OF PANAY AND LEYTE.

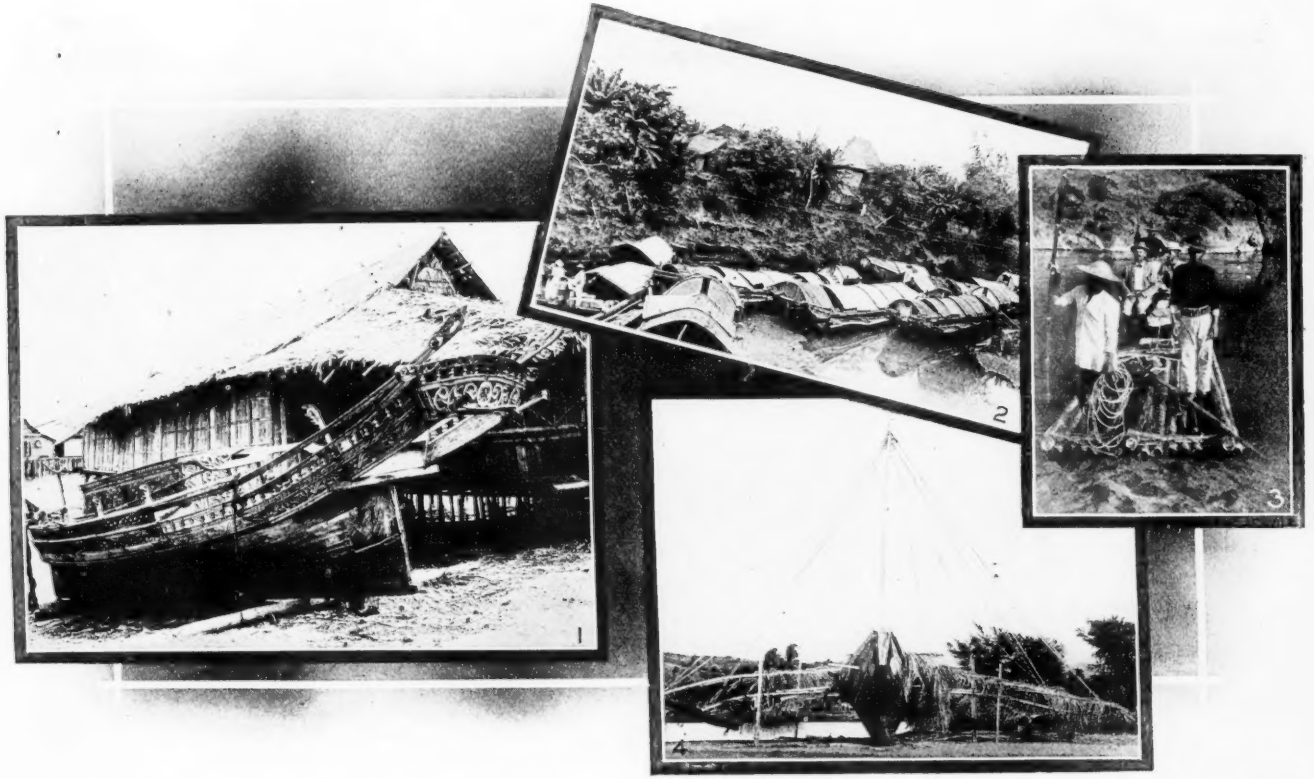


1. MORO DIVERS, TAPUL GROUP. 2. DOUBLE-MASTED OUTRIGGER, LAGUNA DE BAY, LUZÓN. 3. SAILING CRAFT, VISAYAS. 4. MORO VINTA AT JOLÓ. 5. MORO VINTA WITH THATCHED AWNING.

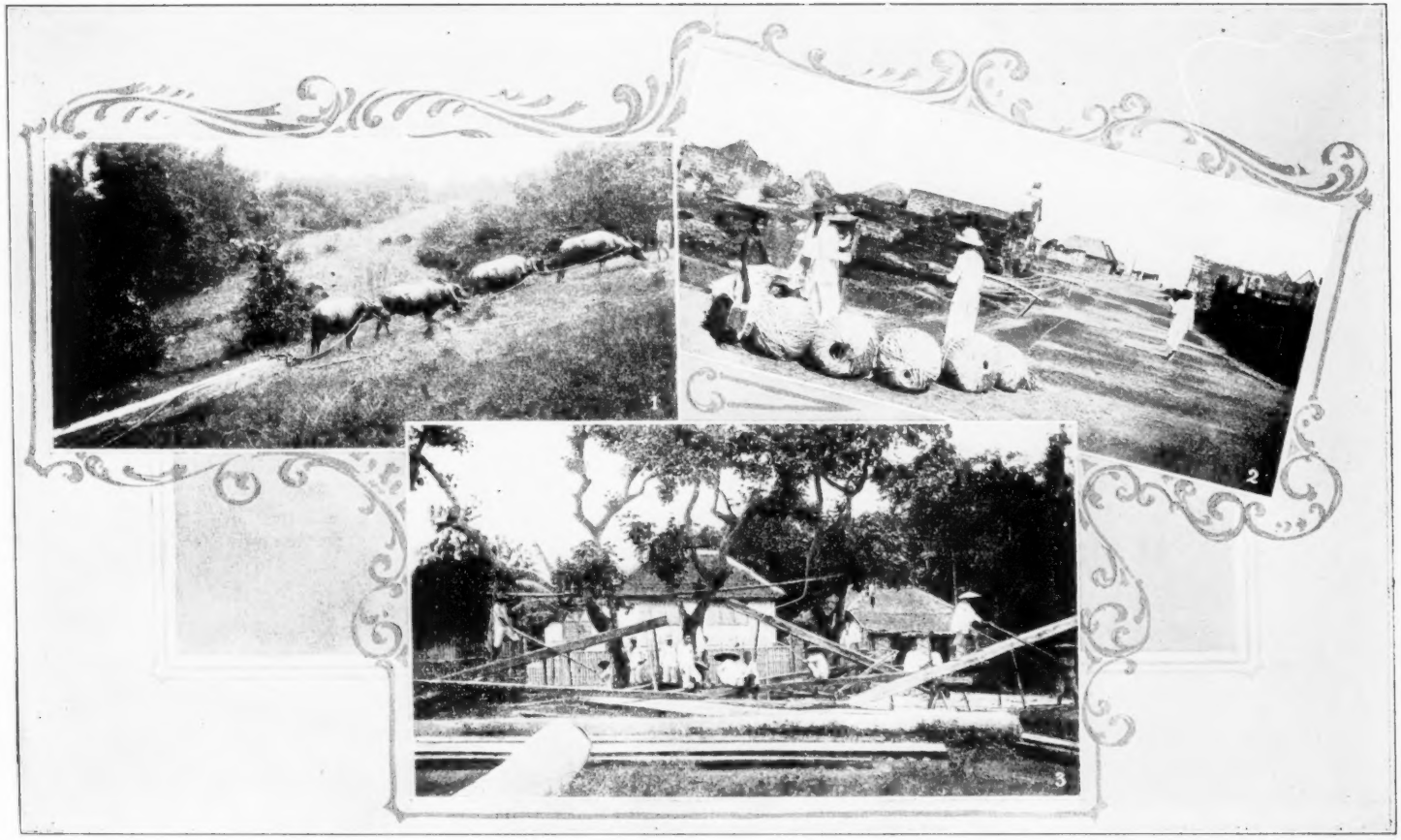
1. FISHING IN THE SURF WITH A SCOOP NET. 2. SELLING THE CATCH AT THE BEACH. 3. SEINE FISHING, WITH FLEET OF FISHING BOATS IN THE BACKGROUND.



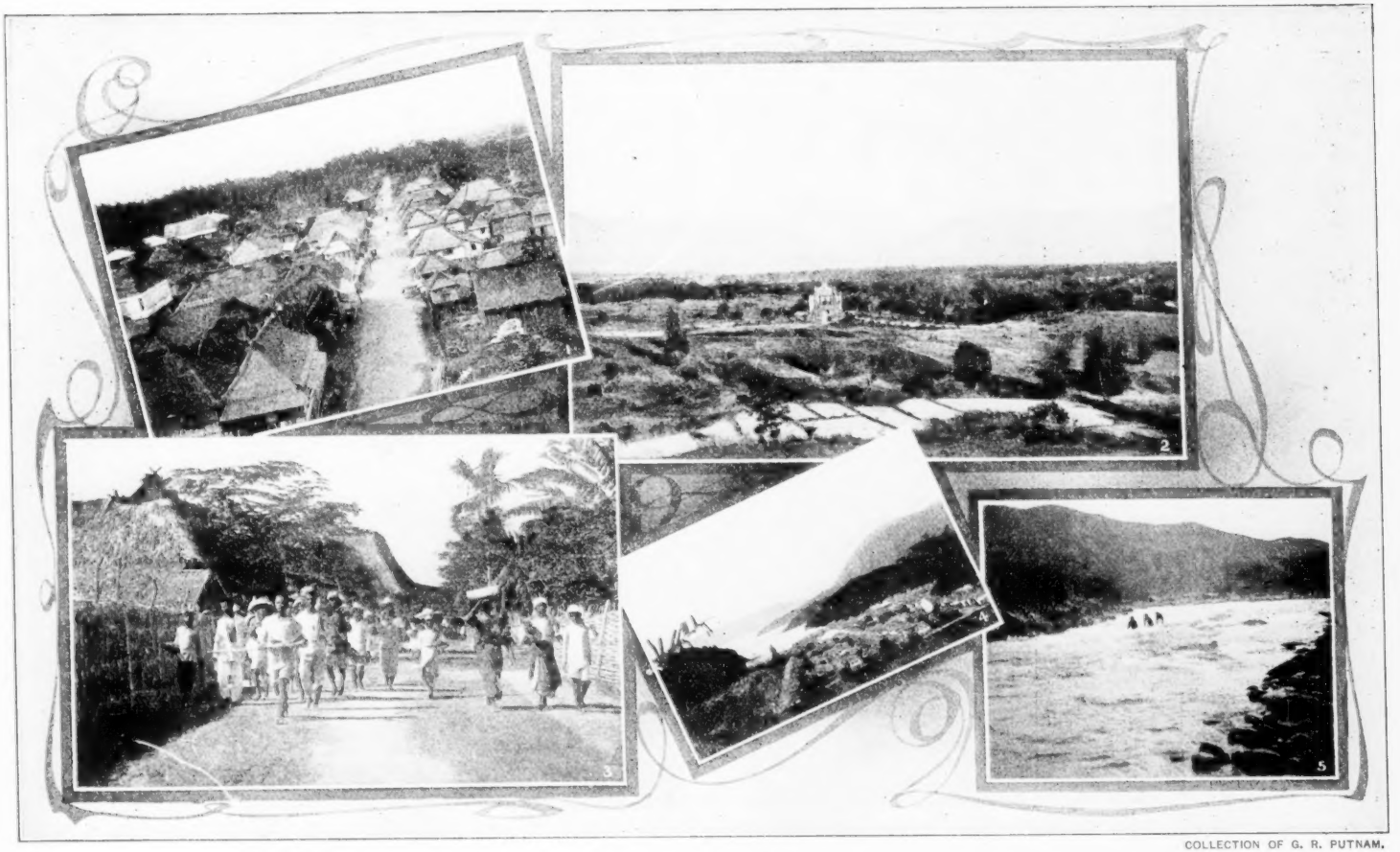
1. FISH NETS IN POSITION FOR CATCH. 2. LIFE ON THE NET RAFT. 3. FISH WEIRS, MOUTH OF PÁSIG RIVER. 4. NET RAFT. NET IN POSITION FOR CASTING.



1. OLD MORO PIRATE BOAT. 2. CASCOES, OR THE COMMON LIGHTER OF THE PHILIPPINES. 3. PASSENGER RAFT ON THE MAGAT RIVER, PROVINCE OF NUEVA VIZCAYA. 4. SINGLE-STICK OUTRIGGER.

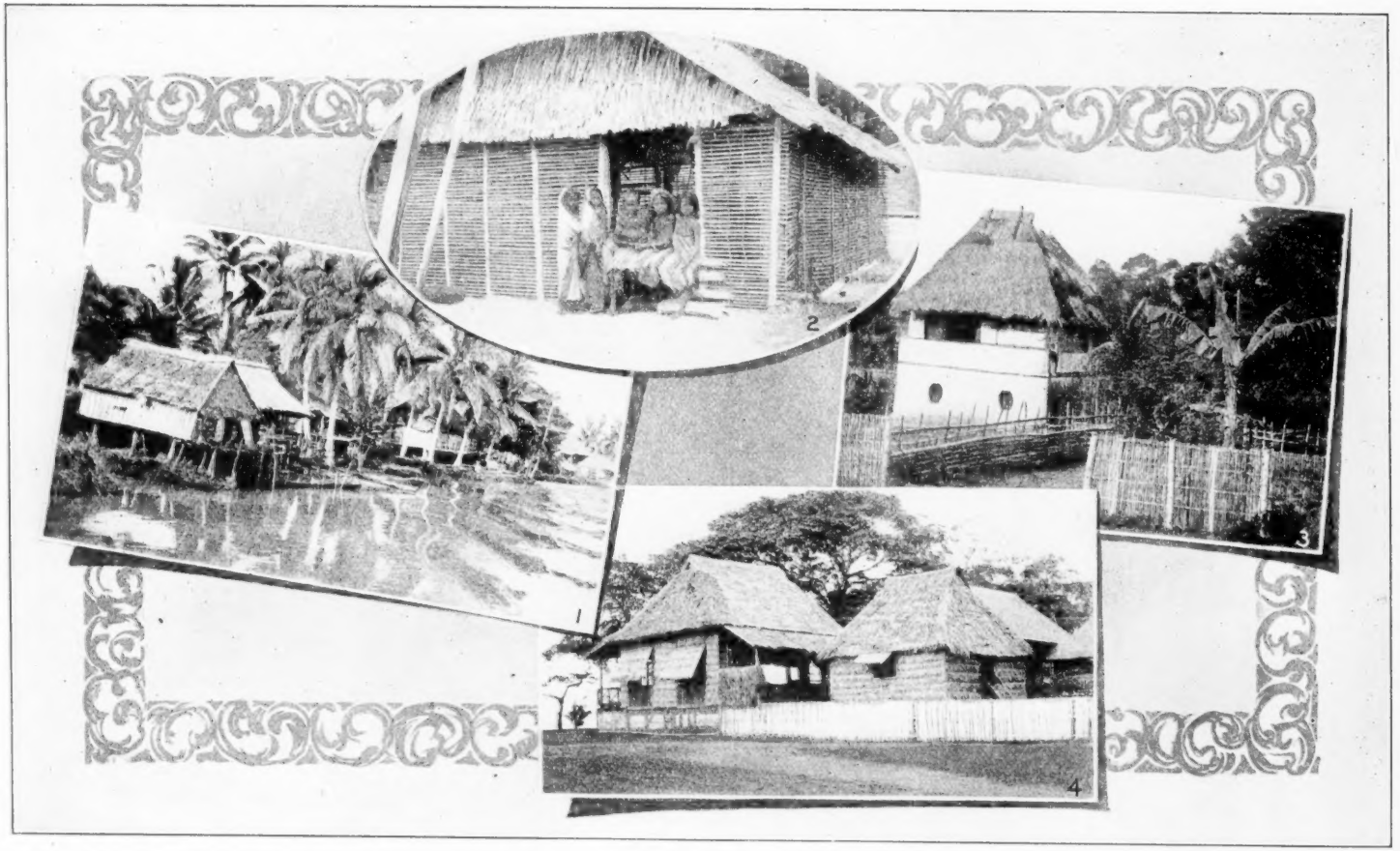


1. HAULING LOGS WITH CARABAO. 2. ROPEMAKING, MANILA. 3. FILIPINO SAWING MILL.

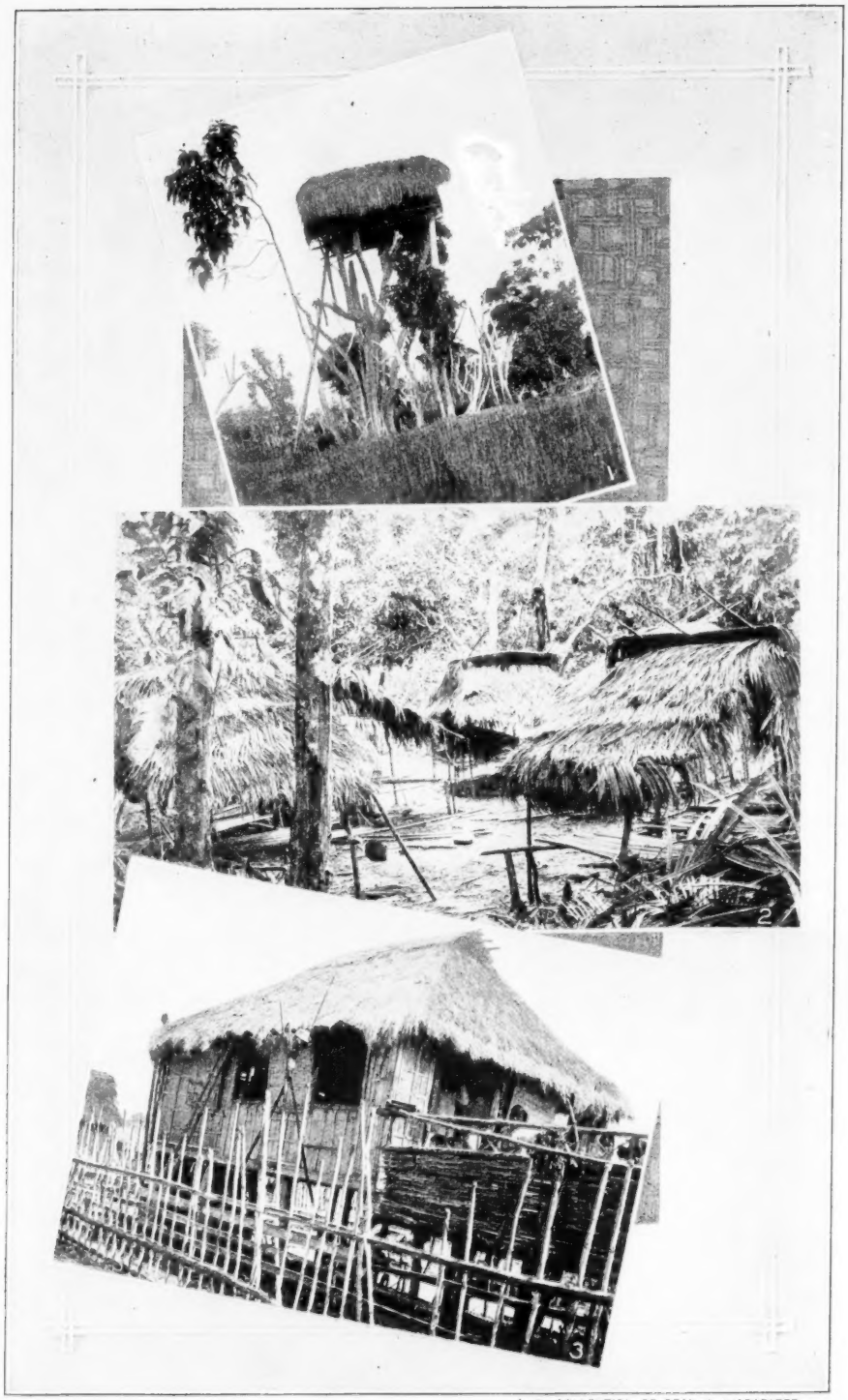


COLLECTION OF G. R. PUTNAM.

1. TYPICAL FILIPINO VILLAGE, BOAC, MARINDUQUE. 2. THE GAP OF VIGAN, ILOCOS SUR. 3. STREET IN BALÍUAG (TAGÁLOGS), BULACAN. 4. VILLAGE OF ROMBLÓN. 5. DESCENDING MAGAT RIVER ON RAFT—NUEVA VIZCAYA.



1. MORO HOUSES ON RÍO GRANDE, COTTABATO, MINDANAO. 2. MORO SPLIT-BAMBOO HOUSE OF COMMON PEOPLE AND SLAVES. 3. MIXED NATIVE ARCHITECTURE OF CIVILIZED TRIBES. STONE AND MORTAR SUBSTRUCTURE AND WOODEN FRAMEWORK. 4. EXAMPLE OF FINE NIPA STRUCTURE.

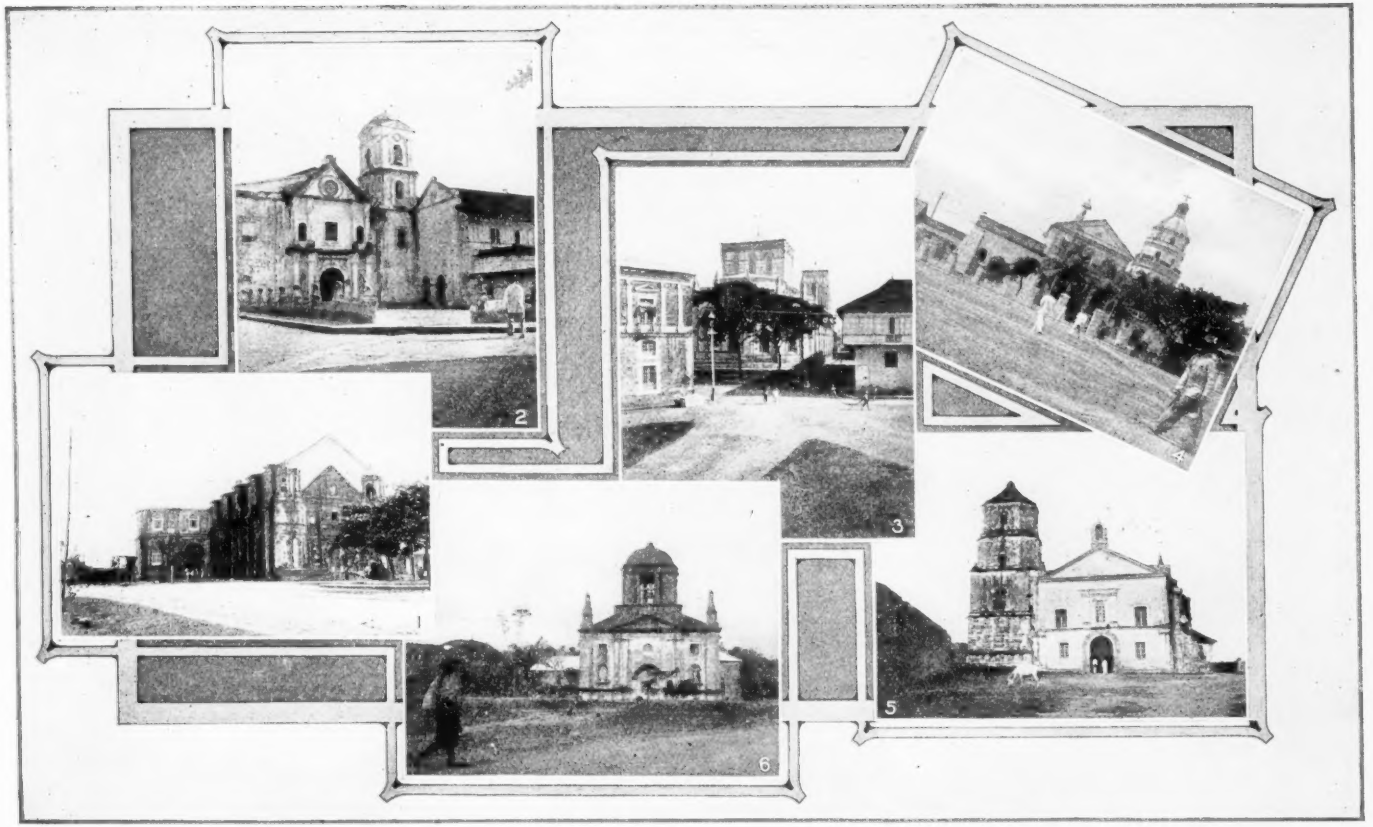


1, 3. COLLECTION OF DEAN C. WORCESTER.

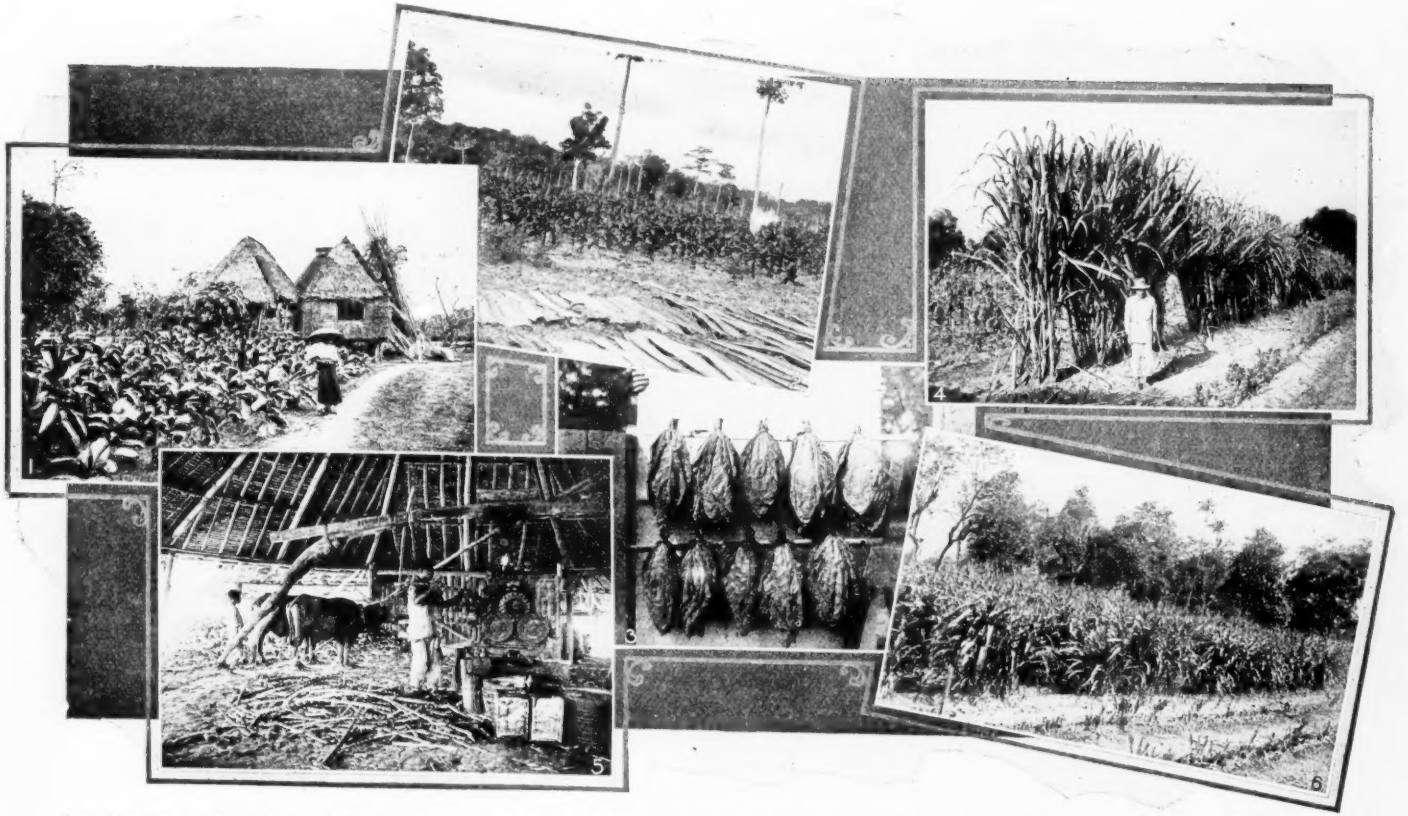
1. GADDÁN TREE HOUSE. 2. A DWELLING OF THE MAMANŬAS. 3. TINGUIAN HOUSE AT PADANGITA—A FEAST IN PROGRESS.

5. COLLECTION OF DEAN C. WORCESTER.

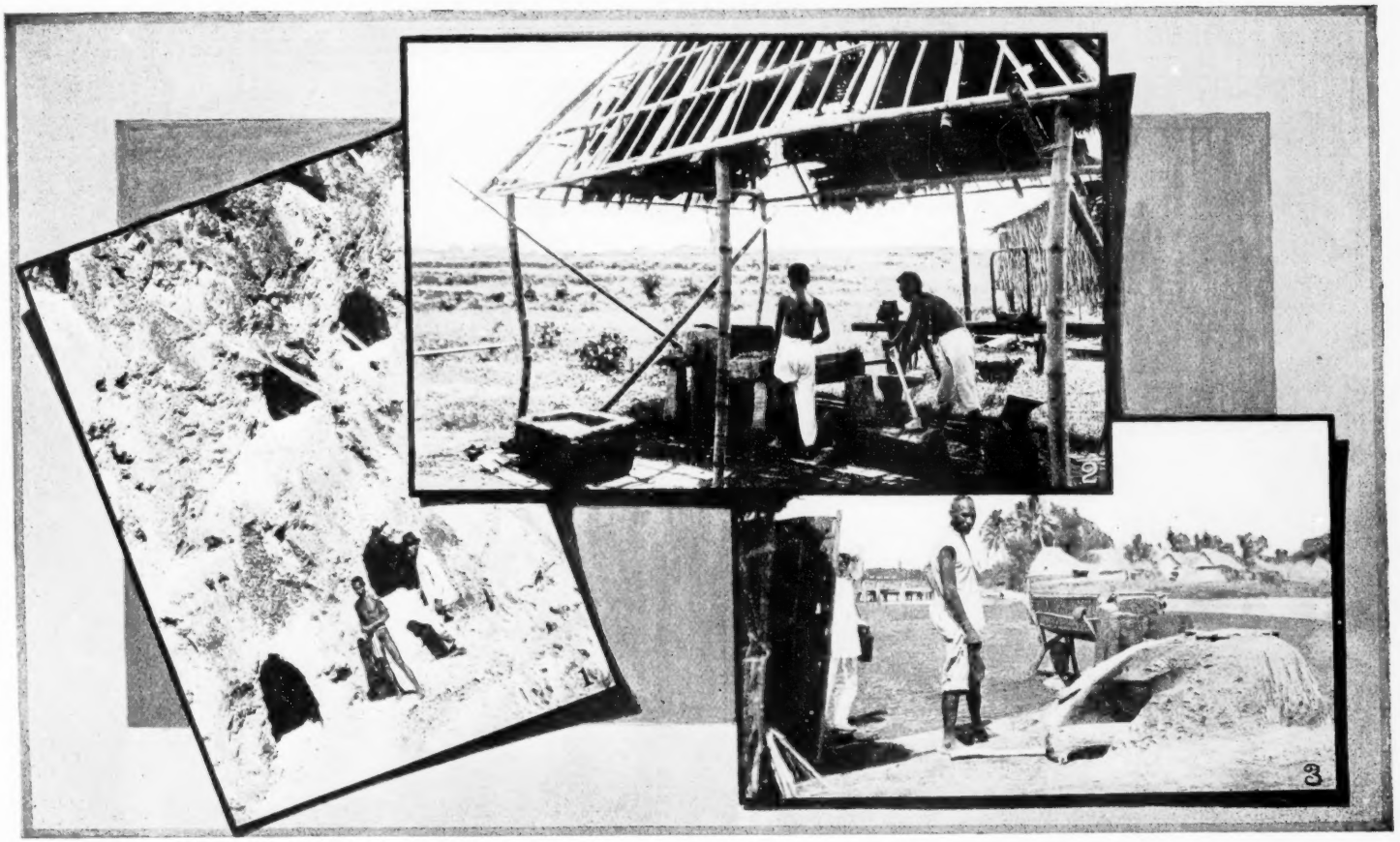
1. MAYÓN VOLCANO. 2. MAGELLAN MONUMENT, ISLAND OF MACTÁN, ERECTED ON THE SPOT WHERE HE WAS KILLED. 3. GIANT FOREST TREE OF MINDANAO, SHOWING NATURAL BUTTRESSES OF TRUNK. 4. BURÍ PALM. 5. TREE FERN, PROVINCE OF BENGUET. 6. MORO WATCHTOWER, DUMAGUETE, NEGROS ORIENTAL. 7. NATIVE BOATS.



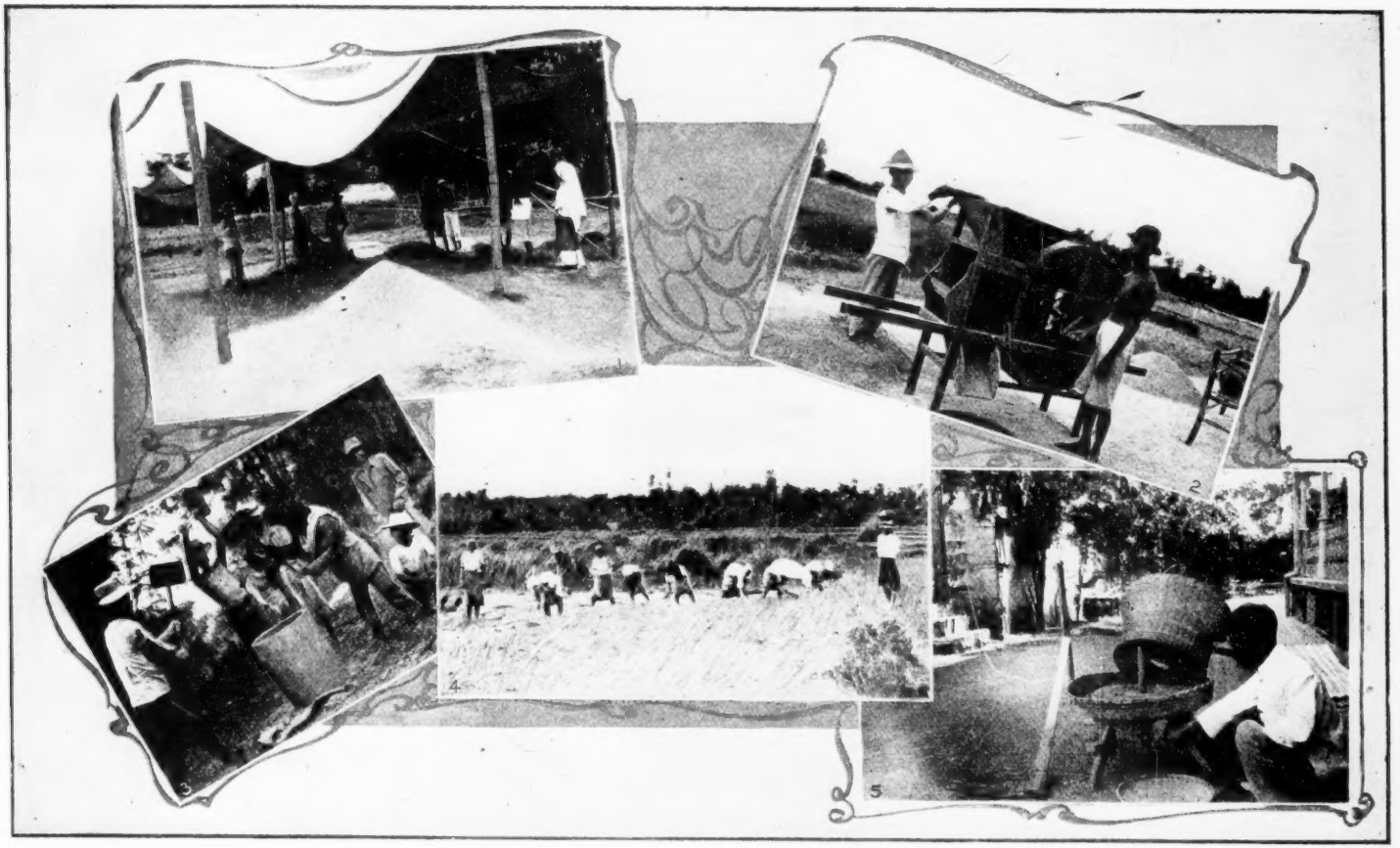
1. CHURCH AT MALATE, MANILA. 2. AUGUSTINIAN CHURCH, WALLED CITY, MANILA. 3. CHURCH OF THE RECOLETOS, WALLED CITY, MANILA. 4. CHURCH AT ALBAY, ALBAY. 5. FORTIFIED CHURCH AT BÓAC, MARINDUQUE. 6. DE LOMA CHURCH, MANILA.



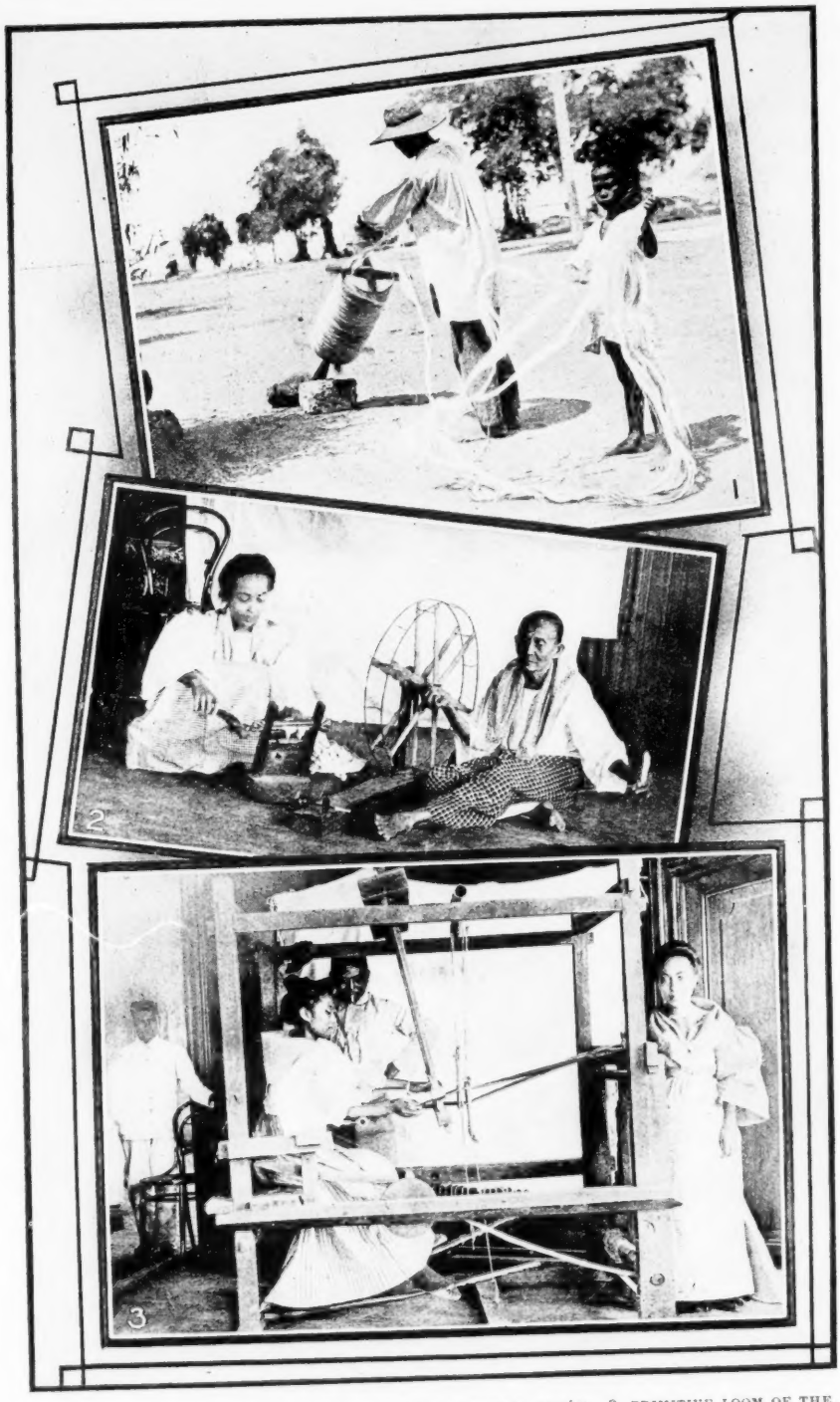
1, 2. TOBACCO FIELDS, PROVINCES OF CAGAYÁN AND ISABELA. 3. TOBACCO LEAVES ARRANGED IN "HANDS" FOR CURING. 4. SUGAR CANE, SHOWING THE LUXURIOUS GROWTH. 5. CRUDE METHOD OF EXTRACTING THE JUICE OF THE SUGAR CANE. 6. TEOSINTE, OR FORAGE PLANT, RECENTLY INTRODUCED INTO THE PHILIPPINES BY THE BUREAU OF AGRICULTURE, MANILA.



1. TUNNELS ON GOLD QUARTZ VEINS, BENGUET PROVINCE, LUZÓN. 2. BLACKSMITH SHOP. 3. SALTMAKING.

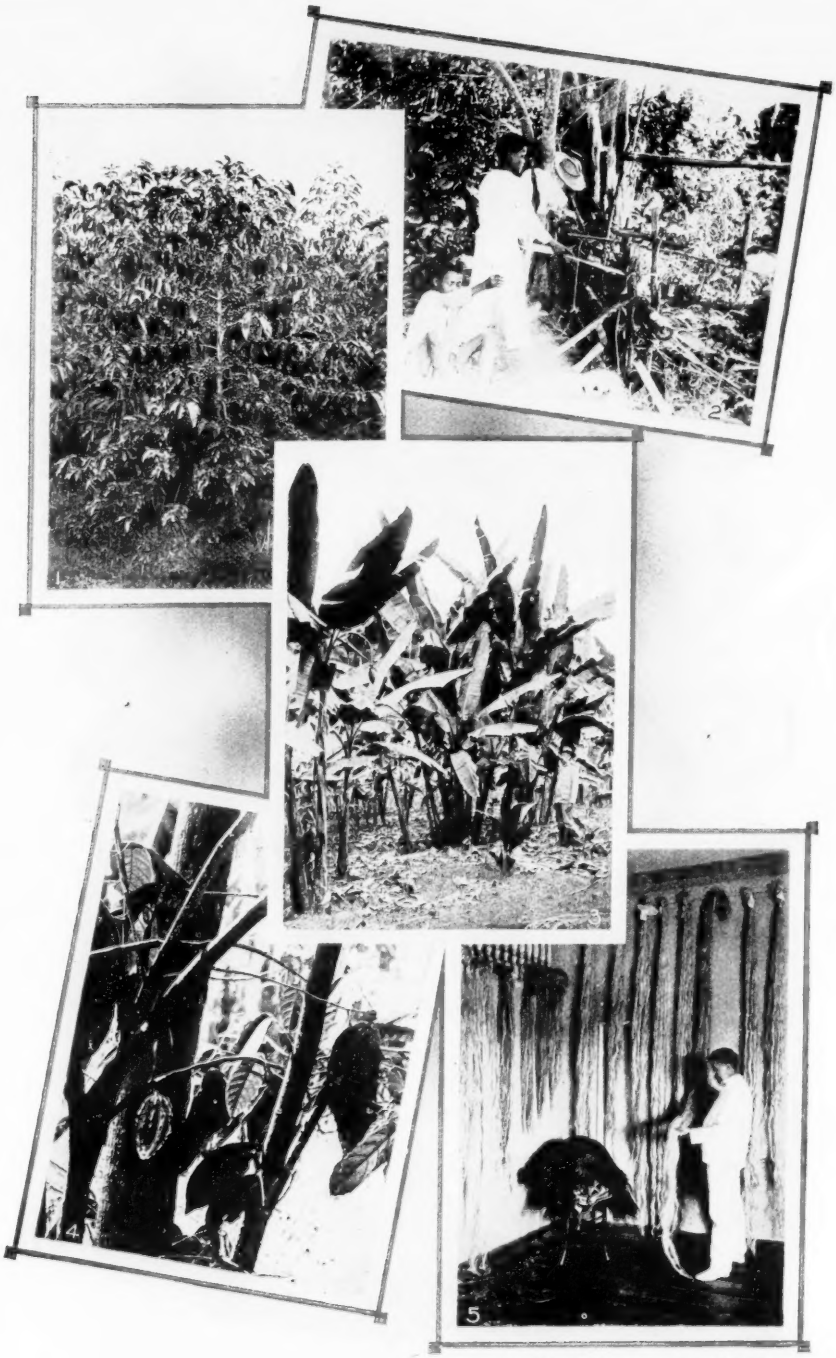


1. THRESHING RICE BY BEATING SHEAVES ON STONES. 2. MILL FOR WINNOWING RICE BY HAND. 3. HULLING RICE IN WOODEN MORTAR WITH WOODEN PESTLES. 4. PLANTING RICE. 5. HULLING RICE.



1. FILIPINOS MAKING ROPE. 2. ILOCANOS SPINNING COTTON, LUZÓN. 3. PRIMITIVE LOOM OF THE ILOCANOS, LUZÓN.

1. CLIMBING THE COCONUT PALM FOR TUBA. 2. HUSKING AND SPLITTING COCONUTS FOR COPRA.
3. COCONUT TREE AND FRUIT.



1. COLLECTION OF DEAN C. WORCESTER.

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this indicates that, although the proportion of population under 20 is unusually large in the Philippines, large families are not as numerous there as in other countries.

PROPORTION OF BABIES

The population under 1 year of age numbered 167,905. This was 2.4 per cent of the total population. For comparison we have a similar proportion in Porto Rico of 2.7 per cent; in the United States, 2.5 per cent, and in Cuba, 1.5 per cent. The low proportion in Cuba was supposed to be due to the disturbed conditions in the island prior to the taking of the census. Similar causes doubtless accounted for the small proportion of this class in the Philippines.

The children under 5 years numbered 1,054,096, which was 15.1 per cent of the total population. The same class in the United States formed 12.1 per cent; in Porto Rico, 15.8 per cent, and in Cuba, 8.3 per cent.

The number under 10 years of age was 2,014,160, or 28.8 per cent of the total population. The same class in the United States formed 23.8 per cent; in Porto Rico, 30.9 per cent, and in Cuba, 22.7 per cent.

The number of children between 5 and 17—that is, of school age—was 2,137,397, or 30.6 per cent of the population. The proportion of school children in Porto Rico was 32.8 per cent, a little greater, while, on the other hand, that in the United States was 28.3 per cent, or slightly less.

PROPORTION OF ADULTS

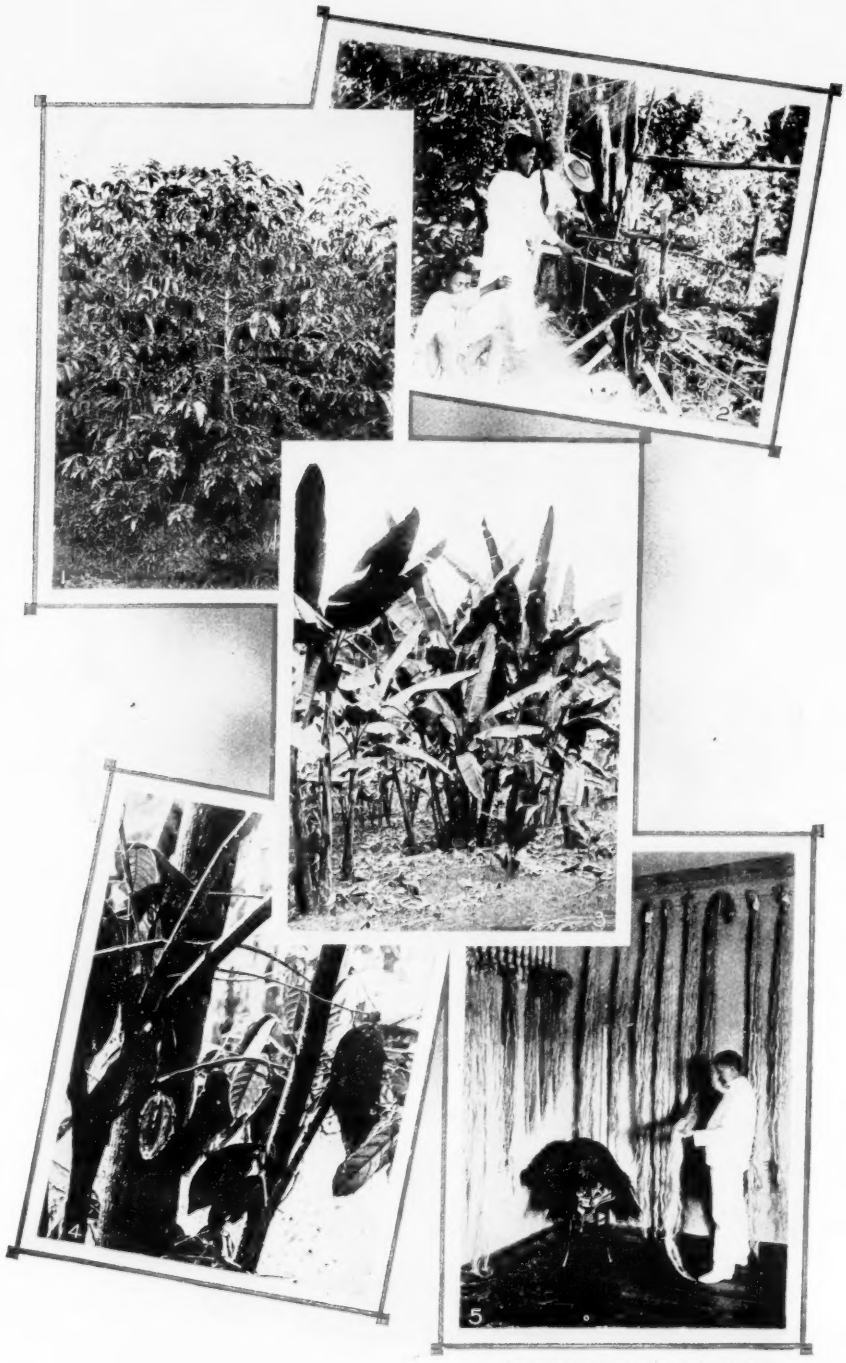
Persons between 20 and 29 were in smaller proportions in the Philippines than in either the United States, Cuba, or Porto Rico. Between 30 and 39 years, 40 and 49, and 50 and 59 there were larger proportions in the Philippine Islands than in Porto Rico, but smaller proportions than in either the United States or Cuba. Between 60 and 69 the proportion was greater than in Cuba or in Porto Rico, but less than in the United States. Between 80 and 89 and at more advanced ages the proportions in the Philippine Islands exceeded those of either of the three countries used in comparison.

In the Philippine Islands no fewer than 3,553 persons were reported as being more than 100 years of age. It is not probable that a Filipino ever reached that age, or that many have exceeded the age of 80 years. To test the question, several hundred of these cases of reported great age were returned to the supervisors of the census with instructions to have the cases investigated thoroughly, and, if possible, the ages verified by reference to the baptismal certificates. Owing to the destruction of records during the recent insurrection, it was possible to obtain this evidence in only a very few cases, but in every such case the reported age was reduced greatly. The average reduction in all such cases was from 105 years to 83 years—that is to say, the true age was about four-fifths the reported age.

THE MARRIED STATE

Of the total male population of the Philippines 58.6 per cent were reported as single, and of the female 54.1 per cent. These proportions also were slightly less than in the United States, which were for males 60.6 per cent and for females 55.1 per cent.

As in Cuba and Porto Rico, the married may be divided into two classes, those legally married and those living together by mutual consent, or, as they will be spoken of hereafter, consensually married. The legally married numbered 2,314,583, constituting 33.1 per cent of the entire population, a proportion somewhat less than in the United States, where it was 36.5 per cent. It formed a strong contrast with the proportion in Cuba, which was only 15.7 per cent, or less than half as great a



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proportion. The number consensually married was 233,670, forming only 3.3 per cent of the population. This class was in the Philippines much smaller proportionally than in Cuba, where it formed no less than 8.4 per cent of the population. Adding together the legally and consensually married, the proportion of all married persons in the Philippines became 36.4 per cent of the population, or about the same as in the United States, while in Cuba the legally and consensually married together formed only 24.1 per cent of the population.

The proportion of married in the Philippines, including those legally and consensually united, is greater than in Japan, Germany, Austria, Canada, Mexico, Switzerland, United Kingdom, Argentina, Cuba, and Porto Rico, but less than in British India, where infant marriages are so prevalent, and in the United States. It is rather extraordinary that seven-tenths of all the prostitutes reported in the islands were from foreign lands, which speaks volumes for the chastity of the Filipinos.

THE WORKERS

The occupations of the Filipinos are few in number and present little variety. There is little coöperative work, very little use of machines, and little specialization of function. A majority of the male Filipinos farm on a small scale, those living near the coast alternating that occupation with fishing. Most of the women who were returned as having occupations were spinners and weavers, weaving in their homes on hand looms the beautiful, delicate *jusi*, *pina*, and *sinamay*. They weave also hats and mats of the finest quality, all this work being done in a small way as a household occupation, alternating with the duties of housekeeping.

With this introduction the reader will be prepared for the statement that a large proportion of the people, much larger than in the United States or in almost any other country, were reported as engaged in gainful occupations. Indeed, out of a civilized population of 6,987,686 in the Philippine Islands no less than 3,037,880, or 43.5 per cent, were in this class, as compared with 36.3 per cent in the United States, 33.1 per cent in Porto Rico, and 39.6 per cent in Cuba.

THE SURPRISING NUMBER OF WOMEN WORKERS

This excessive proportion was, however, due to the large number of women workers, namely 1,025,287, as is shown by the following table, in which the proportions of wage-earners among the males and the females are given for the above four countries:

Country	Male.	Female.
Philippine Islands	57.6	29.4
United States	58.7	12.8
Porto Rico	56.9	9.9
Cuba	68.2	8.8

From the above table it appears that the proportion of women engaged in gainful occupations in the Philippines was more than double that of the United States, three times that of Porto Rico, and more than three times that of Cuba, while the proportion of working males was about equal to that in the United States and Porto Rico and less than in Cuba.

This remarkable showing is in part explained by the fact that a large proportion of the women assist in supplying the family exchequer by spinning and weaving and to a less extent by working in the fields.

Persons not engaged in gainful occupations include women engaged in housework, children at school, and other dependents.

Farmers and farm laborers constitute more than two-fifths of all who are en-

gaged in gainful occupations. A much smaller proportion are engaged in manufacturing and mechanical pursuits, while the number in professional service is exceedingly small, forming less than one per cent of the entire number gainfully employed.

Among the Filipinos themselves there are 1,326 physicians, 676 priests, and 727 lawyers. Nearly one-half of the Chinese wage-earners are merchants or salesmen. Of the foreign or white population a small proportion is engaged in agriculture, but most of them are found in the trades and professions.

The following table shows the proportion of the wage-earners in each age group to the total population, and with it, for comparison, corresponding figures from the census of 1899 for Cuba and Porto Rico.

Age period.	Philippine Islands.	Cuba.	Porto Rico.
10 to 14 years.....	16.8	24.6	22.4
15 to 24 years.....	66 9	52.5	51.8
25 to 34 years.....	72.4	58.5	54.3
35 to 44 years.....	74.3	60.4	56.9
45 to 54 years.....	72.5	60.3	55 4
55 to 64 years.....	65 8	59.5	53.2
65 years and over.....	42.7	52.0	44.5

EXCESS OF BIRTHS OVER DEATHS IS LARGE

The average excess of births over deaths in the Philippine Islands for the last 25 years is 8.8 per thousand, but excluding the cholera years (1879, 1889, and 1890), when the death rate exceeded the birth rate, it was 17 per thousand per year. This is higher than that of the United Kingdom, Sweden, Norway, Japan, Italy, and Germany, but slightly less than that of the United States. It is many times that of France and Ireland and double that of Switzerland. Yet with this great excess of births over deaths, the population has not increased rapidly. It has taken nearly sixty years to double in number, and is now only four times as great as at the beginning of the century, while in that time the population of the United States has multiplied fifteen times. The cause for this is the epidemics, such as cholera, plague, and smallpox, especially the first, which periodically sweep over the islands and in a single year wipe out the gains of the preceding two or three years. So the population has grown by a series of regular and rather rapid accretions, succeeded by sudden and great losses. Thus the cholera epidemic of 1879 must have destroyed 400,000 lives, equivalent, approximately, to the normal increase in three years. The cholera epidemic of 1889 and 1890 was not so severe, its victims numbering in the two years about 260,000, while that of the year 1902 must have destroyed over 200,000 people.

The death rate for the year 1902, 63.3 per thousand, was just about double the normal, and was in large part due to the prevalence of cholera. Other things, such as the loss of crops through locusts, the loss of carabao, and the after effects of the insurrection, by which the constitutions of those affected by it were undermined, through hardship, exposure, and want of food, probably contributed.

THE CAUSE OF DEATH

The smallest proportion of deaths occurred in the cool season (November to February). In the warm season (March to June) there occurred 28.4 per cent, and in the wet season (July to October) not less than 47.1 per cent.

Of all the deaths that occurred in the Philippine Islands in the year 1902, 311 out of every thousand, or nearly one-third, were caused by Asiatic cholera. The large death rate from this source may be regarded as extraordinary. It was not so, however, with the fatality from malarial fevers, which are always prevalent in the islands, and probably

little more so during this year than in preceding years. The deaths from this cause constituted 26.8 per cent of all the deaths, or somewhat more than one-fourth. These two causes, cholera and malarial fevers, caused nearly three-fifths of all deaths. Dysentery and diarrhea together caused 69 out of each thousand deaths, and was third in rank of fatality. The fourth disease in fatality was tuberculosis, whose victims numbered 66 out of every thousand, and the victims of smallpox, which raged in many parts of the islands during the year, were nearly as numerous, numbering 34 out of each thousand. The victims of beri-beri, a disease which is peculiar to the brown and yellow people, due probably to insufficient nutrition, numbered 13 out of every thousand, and diseases of the stomach caused 12 deaths per thousand. No other disease caused as much as 1 per cent of all the deaths. Puerperal septicemia, bronchitis, typhoid fever, diphtheria, croup, and meningitis each had a few victims, but in each case less than 1 per cent.

CONTRAST WITH THE UNITED STATES

These figures are in strong contrast with those which prevail in the United States. In that country the most fatal of all diseases is commonly tuberculosis, which is usually credited with a little over one-tenth of the deaths. Next to that is pneumonia, in a nearly equal proportion. This latter is well-nigh unknown in the Philippines, its victims numbering in 1902 only one in a thousand of the deaths.

In the United States dysentery and diarrhea together carried off about 4.4 per cent, only two-thirds the proportion in the Philippines, which was 6.9 per cent, while heart disease, which is almost unknown in the Philippines, caused 6.7 per cent of all deaths in the United States. Typhoid fever is vastly more prevalent and deadly in the United States than in the Philippines, its victims numbering 3.4 per cent of all deaths in the United States, while in the archipelago the number was trifling. It is much the same with meningitis, which in the United States carried off 2.5 per cent. Malarial fevers, prevalent as they are in some parts of the United States, are seldom fatal there, only 1.4 per cent of all the deaths being due to this cause. Kidney diseases, old age, apoplexy, and many other diseases which claim numerous victims in the United States were either unknown in the Philippines or claimed very few victims.

THE AVERAGE FILIPINO FARM IS VERY SMALL

Nearly half the parcels of occupied lands are less than one hectare (2.471 acres) in size, while thousands of tracts, one-fifth of the total number, contain less than 1,075 square feet. These small parcels of land, many of them no larger than ordinary kitchen gardens in the United States, are resided upon by, cultivated by, and contribute materially to the subsistence of their owners or occupants, and the presentation of agricultural statistics for the Philippines would be extremely faulty and incomplete were they not included.

The people of the Philippines are extremely gregarious; the isolated farmhouse, so familiar in rural sections throughout the United States, is practically unknown in these islands, whose inhabitants almost universally live in communities and largely subsist on such products of the soil as can be cultivated or gathered from wild growths in the immediate vicinity of their dwelling places.

This custom of herding together is not due alone to the social, company-loving disposition of the people. It has been rendered necessary by the ladronism and the raids of Moros that prevailed throughout the islands for centuries.

This has been one of the greatest obstacles in the way of agricultural de-

velopment and is in a large degree the cause of the numerous small land holdings. Another reason is the great productiveness of the soil and the variety of crops that can be raised on a small piece of land.

The average size of all farms in the Philippines is only 346.8 ares—equivalent to 8.57 acres. In the United States the average size of all farms is shown by the census of 1900 to have been 146.6 acres, making a ratio as to size of about 17 to 1.

VAST EXTENT OF UNUSED LAND

The spaces of land between their villages are as a rule unpopulated, and these intervening tracts, frequently of great extent, are almost wholly uncultivated and practically unused, except in a limited way for grazing purposes or in the utilization of such wild growths of fruits, vegetables, or fiber plants as they produce.

MOST OF THE FARMERS OWN THE LAND

In the archipelago, as a whole, by far the largest proportion of the 815,453 Christian farmers own the land they cultivate, while tenants who pay a share of products as rental come next in order numerically; tenants who pay their rent in cash, while not comparatively numerous, exceed the combined numbers of those who are designated as "labor tenants" and the occupants of land who pay no rent.

A comparison of the Philippine statistics relating to tenure with those given in the United States census reports for 1900 shows that the percentage of owners is much larger in the islands than in the United States.

More than four-fifths (80.8 per cent) of Philippine farms are cultivated by their owners. The great majority of individual holdings, regardless of tenure, are of small areas—88.9 per cent containing less than 5 hectares, 70.4 per cent less than 2, 49.8 per cent less than 1, and 21.7 per cent less than 0.35 of a hectare.

PAUPERISM UNKNOWN

Pauperism is almost unknown among the people of the islands, their wants being few and easily supplied. Little clothing is required, and the simple food upon which the masses of the people subsist, consisting mainly of rice, fruit, and fish, can, as a rule, be had with little exertion. The few who, from old age or accident, are unable to provide these necessaries for themselves are usually taken care of by relatives or friends.

The total number of paupers in the archipelago, exclusive of Manila, on December 31, 1902, was but 478, or less than 1 in each 10,000 of the inhabitants. This may be contrasted with the corresponding proportion in the United States, *viz*, 12 per 10,000.

PROPORTION OF CRIMINALS SMALL

The number of criminals in confinement December 31, 1902, in the Philippines was less than 8 in each 10,000 of population. In the United States in 1890 there were about 13 in each 10,000 of the inhabitants. Considering the unsettled condition of affairs in the island during the six years prior to the census, the showing is not only favorable, but remarkable, and indicates that the Filipinos as a race are not especially disposed toward crime.

The most common crimes are ladronism, theft, assault, and murder. The causes are traceable to the ravages of the war, to the poverty and unrest which followed, accentuated by the subsequent failure of crops and loss of farm animals. In the majority of the provinces crime is said to be decreasing.

In most of the provinces reporting, the convicts are employed on public work, such as the building and repairing of roads and bridges. In a few of the provinces it has not been found ex-

pedient to do this, and they are employed in the prison in petty manufactures, such as making chairs, baskets, hats, rope, etc.

THEY ARE PROVING THEMSELVES GOOD WORKMEN

A report made to Governor Taft November 4, 1902, by J. B. Aleshire, major and quartermaster, United States Army, in charge of army transport service at Manila, clearly demonstrates the availability of native labor and strongly refutes the frequently expressed idea that such labor cannot be profitably employed. His report shows that upward of 1,800 Filipino laborers, skilled and unskilled, were on the pay-rolls of the Quartermaster's Department, a large proportion of whom were given regular and almost continuous employment. About 450 of the employees were engaged as launch and lighter officers and crews and were rated as unskilled, having been principally engaged in the handling of coal, freight, baggage, forage, etc.

Major Aleshire says:

"Chinese labor was formerly employed for the handling of coal, but has been abandoned and replaced by Filipino labor, which by practical tests during several months averaged more tons per day per man and at a much lower rate per ton.

"The attendance of the Filipino laborer has been and is excellent. They do not absent themselves after Sundays, holidays, or fiestas, nor during such days should they be notified in advance they will be required to work. Their physical strength is much improved, and they are capable of doing as much and as hard work as any laborer we have in the orient."

Governor Taft, in referring to the labor question in an address at Manila, said:

"I know the disposition of most Americans here is to open the doors and let in the Chinese, so that we may have Chinese cheap labor in the islands, but I am emphatically opposed to the general policy of admitting the Chinese, first, because the Filipinos have the strongest opinion that it will be for their detriment, and, second, because I believe the history of the Straits Settlements shows that it will not be for their prosperity as distinguished from the material prosperity of the islands. I am opposed to admitting any Chinese labor until it shall be made to appear that the great works of construction which are essential in the islands cannot be carried on satisfactorily with Filipino labor."

The rates of wages which have prevailed since American occupation, while low as compared with wages in the United States, have been substantially double those paid under Spanish dominion.

THE FILIPINO IS A NATURAL-BORN FISHERMAN

Fish forms one of the principal items of food of the Filipino people, and a large proportion of the people are fishermen.

Fish are caught by various devices. In favorable situations the shores are lined in the shallow waters with traps, weirs, or corrals built of bamboo, and in them a large part of the catch is made. Nets and seines of various patterns are also extensively used, as well as the ordinary hook and line, and in some localities the spear.

The markets of Manila are always bountifully supplied with fresh fish of many varieties and of fine flavor, and the fisheries in the vicinity which supply the city are said to be highly remunerative. The same is true at other centers of population throughout the Philippines.

It appears from the statements of the supervisors that about nine-tenths of the people of the island use fish as their principal flesh diet. The average family consumes in the neighborhood of 800 pounds of fish per annum.

The total annual consumption of fish in the islands approximates half a million long tons. In this industry there are employed, during a part or all of their time, the estimated number of 119,000 persons and 28,000 boats.

PEARL FISHERIES

Fishing for mother-of-pearl shells, and incidentally for pearls, is carried on to some extent in the waters of the Sulu archipelago. The instruments used in this industry are, for the most part, crude and of small effectiveness, though there are a few shell fishing outfits equipped with modern diving apparatus—helmet, waterproof suit, pump, etc. The shells are plentiful and valuable, and pearls are frequently found, sometimes very fine ones of high value. The industry is said to be extremely profitable, and is believed to be capable of great enlargement. The investment of comparatively small capital will, it is said, yield large returns under intelligent and businesslike management.

Captain H. R. Hickock, United States Army, the supervisor of census for the district of Siassi, gives the following interesting account of Moro fishing for sharks, sea worms, shells, and pearls in the southern seas:

"All of the Moros are fishermen to a greater or less extent. Shark fishing is done by trolling in deep water with about 40 or 50 feet of line. After a shark is hooked he is first tired out and then drawn up to the boat and killed with a spear. The tails and fins are then cut off and traded to the Chinos, by whom they are then shipped to China.

"The tail and fins of a shark will average about 10 pounds in weight. The Chino traders recognize two grades of this article, for which they pay 45 and 125 pesos respectively per picul of 137 pounds.

"Sea worms, which are muscular, gelatinous animals, living attached to rocks at a depth of water of 6, 8, or 10 feet, are also secured by the Moros and sold to the Chinos, who recognize ten classes, for which they pay from 8 to 80 pesos per picul."

PHILIPPINE TRADE

Philippine trade was opened to the world in 1834. The value of imports for 1902 was $33,342,166, of exports $28,671,904. Commerce with foreign countries is carried on mostly in vessels bearing the British and German flags. The number of ports and subports open to commerce has trebled since American occupation began.

OTHER NOTABLE FEATURES OF THE CENSUS REPORT

The preceding pages give a summary of the more important geographic information contained in the Census Report, being drawn principally from the introduction by General Sanger, and from the chapters on Geography, Population, and Mortality by Mr Henry Gannett.

The report contains two important chapters describing the characteristics of the civilized and non-civilized tribes. Every supervisor was instructed to make special note and record of the customs, character, and life of the people with whom he was brought in contact. The principal parts of these reports are published, supplemented by extracts from the speeches of Governor Taft and travelers in the islands, so that for the first time we have a very complete and comprehensive description of every tribe.

The following chapters also are specially important: The History of the Islands, by a member of the Philippine Commission, T. H. Pardo de Tavera, which is the first good history of the Filipinos that has been written and published in the English language by a Filipino; The Judiciary, by Chief Justice C. S. Arrelano and Assistant Justice Torres; Population, by David P. Bar-

rows; Mr Barrows, as a result of his special study of the people, has greatly reduced the number of tribes into which the Filipinos are usually divided; the admirable discussion of the Climate of the Philippines, by José Algué, Director of the Philippine Weather Bureau, and of the Volcanoes and Seismic Centers, by M. Saderro Maso, Assistant Director of the Philippine Weather Bureau; and a series of articles on the agricultural products and possibilities of the Philippines.

Another valuable feature of the report is the large number of colored maps and diagrams which picture in graphic form the facts obtained by the census. Among these may be mentioned a colored map of the Philippines, 21 by 32 inches; a contour map; maps showing the distribution of forests; the mean annual temperature; the mean annual rainfall, which shows that the rainfall on the eastern coast is more than double what it is on the western coast; the density of population; the distribution of civilized and wild tribes. This map is particularly valuable, as it is the first attempt to show the geographic distribution of the eight civilized tribes and the sixteen wild tribes; the areas invaded by cholera in 1902 and 1903; the distribution of tobacco, cotton, copra, etc.

Mr W. S. Rossiter, who designed the typography and arranged the illustrations, merits public congratulations for the exceeding good taste and artistic appearance of the volumes. He has introduced an innovation into government publications. The Philippine reports are bound in brown buckram, stamped in silver, and bear the seal of the Insular government. They are printed in handsome type, on laid antique paper, and the illustrations are well grouped and beautifully printed. Consequently the volumes do not wear that ugly, forbidding aspect which makes the usual government publication, however worthy, sink into speedy oblivion. It does not cost any more to publish reports in an attractive and presentable form, and it is far more satisfactory to the public and but justice to the author. It is unfortunate the edition of the work is so small, for every public and school library in the United States ought to have at least one set.

GILBERT H. GROSVENOR.

COMMANDER PEARY'S NEW VESSEL

THE steamship which has been especially built for Commander Peary's Arctic expedition was launched on March 23. Mr Peary appropriately named her *Roosevelt*, in acknowledgment of the great interest taken by the President in polar work.

The vessel is described as a "three-masted fore-and-aft schooner-rigged steamship, with auxiliary sail power." Her principal dimensions are: Length over all, 182 feet; beam, 35.5 feet; depth, 16.3 feet; mean draft with stores, 17 feet; gross tonnage, 614 tons, and estimated displacement about 1,500. Her model is similar to modern-built steam whalers, but rather more sharp, the particular features being her long, high, raking bow, overhanging stern, and general wedge shape at the sides, in order that she may be lifted free if nipped in the ice.

The steamship was built of white oak, the frames being treble and close together, with double planking, making the walls from 24 to 30 inches thick. The keel is 16 inches thick, but false keels and keelsons form a backbone projecting 6 feet under the entire length of the vessel. The bow is backed by 12 feet of solid dead wood. Her engine and boilers will develop 1,000 to 1,500 horse-power. Her cost when ready for sea will be $100,000. The funds for the vessel's construction were supplied by the Peary Arctic Club of New York.

SOME LESSONS IN GEOGRAPHY

By Edward Atkinson

AT the request of the Secretary I will venture to give the reasons why I have made an exception to my recent rule of avoiding any new responsibility on account of advancing age, and have joined the National Geographic Society. In giving my reasons for this exception and my sense of the importance of this organization I must of necessity give my personal experience, or a part of what the artist, Chester Harding, called his reminiscences—a chapter from my "egotistigraphy."

When I left school, in 1842, to begin work in a commission house for the sale of textile fabrics I had received the ordinary instruction in geography by learning lessons out of Worcester's school book. After serving the customary apprenticeship of those days, before porters and janitors were employed to do the heavy work, I happened to enter the counting-room of the treasurer of a cotton factory, where I began a course of business life, which has kept me in more or less intimate relations with the cotton manufacture from 1848 to the present time.

It had been my practice as a youth to get at the underlying facts in regard to any pursuit to which my attention had been called. Therefore when I found that my business life might be occupied in the cotton manufacture, perhaps permanently, I put to myself the question, "What is cotton? Why and how does it spin? Where is the center of production?" and so on.

On putting these questions to my elder associates I could get but little information. The common impression among the cotton manufacturers of New England was that cotton was a tropical plant that could only be cultivated by negroes; that the cotton states were substantially tropical states, where white men could not work in the field, and that when the crop was being gathered the whole area of the cotton states would resemble the North under a snow storm—white with the maturing cotton.

This impression had been vigorously promoted by the slave-holding interests and led later to the opposition of what were known at the time as the "Cotton Whigs" to any efforts to remove the curse of slavery.

I then supposed, as all my associates appeared to, that the reason why cotton could be spun was that it was barbed or bearded like rye, and that these barbs interlocked in making the thread—a totally erroneous conception.

Not being satisfied with these conditions, I began my own researches. I procured books from the libraries and strained a point to buy some books of importance from my rather meager earnings. I found it necessary to comprehend the physical geography, the geology, the climatology, and the chemistry of the soils of all the cotton-producing countries; the chemistry of the plant, and the social conditions of each cotton-producing section. Of course, this was a matter of long, tedious, and often misdirected study; but in the end I had attained a considerable amount of geographical knowledge. In fact, it may be said that when one picks out a lock of cotton from the boll in the cotton field, twists it with his fingers, and, doubling with the teeth, makes a strong cord without the aid of any mechanism, he may find in his imagination his counterpart in the Aryan woman of prehistoric time, who, taking a lock of cotton from the boll in India and going through with the same process, made the first piece of cotton cord; and then as he untwists that strand or follows its convolutions

from one end of the cord to the other, by which the ages are united, he will find twisted into it the whole of human history, all the physical sciences, and the record of the progress in illfare and in welfare which has accompanied the cotton manufacture to the present time.

I may not enter into any minute statement of this long period of investigation. Suffice it that I learned how futile must be the effort of every tropical country and of almost all the semi-tropical countries to compete in the production of the useful cottons of commerce with the cotton states of America, there being only one exception developed by my geographical studies. From Commodore Paige's explorations on the Paraguay and Parana rivers, subsequently sustained by Charles Darwin's explorations, I became convinced that the only considerable area of the earth's surface where a well-trained, well-bred, and well-governed population could compete with us was on the great pampas of the Argentine and of Bolivia, which, rising in altitude as they approach the equator, represent a huge area of the most fertile land which can compete in wheat and in cotton with the United States, but now forming a part of what I call "the lost continent of South America," still waiting for good government and the immigration of Germans, Italians, Hebrews, and other industrious and energetic races, by whom that great continent may hereafter be developed.

Having thus come to a clear comprehension of the absolute necessity of a complete mastery of what may be called commercial geography, geology, and climatology, I made an effort, being one of the directors of the Massachusetts Institute of Technology, to induce the corporation to establish a department of instruction on these lines. I had made an investigation of the department which existed in the University of Edinburgh. I investigated as well as I could the courses of instruction given in Germany and in Austria, and I found that we were then, as we are now, years behind these states, and to them we may now add Japan, where complete departments of instruction on these lines are well established.

The other day a professor of the Department of Commercial Geography in one of the great schools in Japan called upon me to make certain inquiries in regard to specific industries, that he might investigate them and find out why they had centered at particular points in this country. I then learned that he had been sent here by the government of Japan two years since, studying the geography, geology, and the climatology of every part of this country.

But I failed in my effort to get such a course established twenty-five or thirty years ago. Today there is general interest in the subject, and it will not be long before every principal university and technical school will have such an established course.

I have made similar investigations in regard to wool, flax, hemp, silk, and other fibers, and the amazing thing to myself has been the ignorance of the great mass of the dealers and handlers of these fibers in respect to the very A B C of their production and the conditions which have centered them at different points of the globe.

Were I not an old man, still burdened with many duties, I should feel inclined to take up a line of work which some bright investigator may well assume, namely, to write a treatise or book on the "Natural History of Industries." Why have the various branches of manufacture of this country centered themselves around special points, not always single points, but here and there throughout the country? Such investigations would of necessity compel the study of commercial geography, as my own effort to comprehend the cotton plant has not yet ended, and every day

some new fact is developed on this line. Education never ends and never will.

What have been the lessons yet to be applied in the cotton states of America? They are these: The invention of the cotton gin brought the curse of cotton upon the old cotton states, perpetuating slavery for nearly a century, when otherwise its burden might have been peacefully removed by economic forces. It has led to the devastation of the cotton lands, maintained ignorance and illiteracy, retarded intellectual and industrial progress down to even the last few years. As I once said in a great meeting in Georgia, "If the North, having discovered that it was building up a dangerous competition in the arts of which it holds the control, should come down with all its force upon the South to put back the burden of slavery upon you, you would fight longer and more strenuously to keep it off than you ever fought to maintain it, and you would secure your own liberty and the emancipation of every person, white or colored, by force of arms, if that were necessary."

Now, what have been the sequelæ of slavery? As yet the masses of the cotton-growers have little comprehension of the conditions of climate and soil on which they raise their crops. The greatest progress has been made in the Agricultural Department in making the production of cotton an applied science, but as yet it is not widely practiced. When common sense and a small measure of intelligence shall be applied to the existing cotton fields of the South, the crop may be doubled without the addition of a single acre to the area put under the plow, and when the right types of sheep are bred to meet the conditions of the soil and the climates of the upland cotton district on the Piedmont plateau and of the valleys among the hills, each section may be supplied with its own specific breed, as every county in England and Scotland now is. The sheep folded and fed upon the partially exhausted cotton lands, the crop will be doubled. Add the wool clip and make that great Piedmont plateau the center of the fine-wool production of the world, as the cotton states have become the center of the cotton production of the world.

Such is the picture which is brought before my mind by your undertaking to establish a national geographical society, and it is under this influence that I have joined one more society, while withdrawing from many others in which I have heretofore been interested.

One lesson I learned from this investigation, leading me to conclusions which may not be so acceptable to readers at the present time as they would be if each master of any branch of industry would study for himself the geography, geology, and climatology on which his own branch of industry rests.

I learned certain principles of economic science—a principle being "a rule of action, a maxim, an admitted truth requiring no further demonstration," in that respect differing from a policy. I learned to discriminate between the principle of free trade and the policy of protection in which I had been bred and to which the very large majority of my business associates then adhered, that majority having been gradually changed until the balance is nearly the other way, even in the restricted lines of my associates.

I learned what I venture to state as another principle of economic science, namely, high wages in money or what money will buy are the complement or correlative of low cost of labor in the unit of product in every branch of industry that has passed beyond that of being a mere handicraft. In the handicrafts the rate of wages governs or corresponds to the cost of labor in the unit of product, but in the arts to which science, invention, and mechanism have been applied the cost of labor in the

unit of product is diminished in just proportion to the advance in the rate of wages that are secured by those who become skilled in the conduct of the work. It therefore became manifest to me, as it is now becoming manifest to the great mass of the people of this country, that the fear of foreign so-called pauper labor, by which destructive duties on imports have been chiefly maintained, is foolish. We are surely learning that we have relatively the cheapest labor in the world, for which the highest relative wages are paid.

I learned that, with the exception of a very few of the crude products of the tropics and with the exception of a very few arts, like the manufacture of Brussels lace and other similar luxuries which are produced by hand labor at the level of pauper wages, we might hold paramount control. I became convinced that just so fast and so far as our system of collecting revenue from duties on imports could be limited to the least number of articles and collected only for revenue purposes would the manufactures, mechanics, arts, and agriculture of this country be most fully protected, the development of domestic industry most fully assured, and the imperial control of commerce, which of right rests with us on account of our control of the imperial metal, iron, would be fully assured.

I now recognize with much satisfaction that I have lived long enough to witness this true theory of wages and the source of profits generally accepted by men of affairs of this country, and I may live long enough to see this country take its true place as the paramount power among the nations by becoming the greatest example of the free exchange of product for product and service for service with all the states and nations of the world. The same study of geography and other factors in the production of fibers might lead others to a different conclusion. I am only giving my own egotistigraphy.

And now, having read the foregoing, I must yet add a few more thoughts, even at the risk of going beyond the limit of the space that you can assign to me. One great benefit from the organization of this Society may be that we may no longer be compelled to go to Germany for the best maps and commercial atlases of the world; that we may not be compelled to go to England for the only commercial geography of any merit in the English language, but may secure such improvements in our own school atlases that the instruction in geography will be something more than memorizing, as it used to be in my day, and something more in the line of a true education than I believe it now is.

Yet again, in witness of the importance of true knowledge of commercial geology and geography, let it be remembered that the great developments of science in the manufacture of iron, in the application of steam power, preceded only by a few years the great Napoleonic wars, giving to England the power to develop mechanism and manufactures to carry on that great war, developing her commerce and increasing her wealth even during that long struggle.

And, again, let it be borne in mind that the whole basis of the modern industrial development of Germany rests upon the invention of two Englishmen, Gilchrist and Thomas, by whom the manufacture of basic steel was made possible from the phosphoric ores in Germany, thus enabling Germany to rival England in the development of mechanism and manufacturing arts and to take a position equal to Great Britain in the production of iron and steel. These two remained dominant forces until through the development of the yet greater deposits of iron and coal of the United States we were enabled to take the dominant position in the production of the imperial metal, which lies at the foundation of all the indus-

trial arts and of the great commerce of the world, placing us where we are now in the production of iron and steel; more than equal to Great Britain and Germany combined, nearly half the product of the whole world. Had it not been for the excess in the price of iron and steel, which the duties on imports enabled the iron masters of this country to charge by a far heavier price to our consumers than the prices charged in Great Britain and Germany, we might long since have assumed the paramount position which we are now rapidly attaining in the export of the higher products of iron and steel, the machinery, the tools, and the fabrics that give employment to ten skilled mechanics where the mere production of the crude metal gives occupation to one or two, being a small relative force in point of number, mostly common laborers.

Again, the time has come when the forces of commerce are being summoned to the suppression of the brute element in man, from which war and warfare are generated. Commerce demands peace, order, and industry. The manufacturers, the merchants, and the bankers hold paramount power when they choose to use it, and when they refuse the supplies that are wasted upon war and warfare, the end—peace on earth—may be within their power. Now they are coming up to demand that the ferryways of commerce upon the high seas shall be neutralized, and that the "ships that pass from this land to that, weaving the web of concord among the nations," shall no longer be subject to destruction at the will of a belligerent whose only duty is to destroy commercial vessels. The men of affairs are now combining to establish the rights of neutrals and to stop the nefarious work of commerce destroyers. The mental energy which is developed in the conduct of commerce, requiring powers far higher than those required in the conduct of war, may soon assert its power and bring into living light the vision of peace and good will among men.

In this treatise I have given an account of how I happened to gain a very considerable amount of education in geography through the study of cotton.

Were I a teacher in a school, especially in an evening school where young men and women occupied in the various trades make an effort to continue their education, I would call upon each one to bring to the school an example of one of the leading subjects of trade in which their employers deal. They would bring cotton, wool, flax, hemp, silk, and other fibers, gums, examples of paint and varnish, food products of different kinds, wood, metals, leather, and many other common articles of trade.

I would then take up at a venture one subject—for example, a bit of leather. I would put my questions, "What is this?" The answer would be, "Leather." "What is leather and how is it prepared?" The answer would be, "By tanning." "What is tanning; what is used?" Answers would be few, if any. "How many kinds of leather are there? Where does each kind come from? From what animals? Why do we depend on this or that section for diferent kinds of leather? Why are these animals fed here and not there? What is the soil? What is the climate? What is the fur or hair? What becomes of it?" and so on. And before the end of the winter's course the simple subject of leather would have extended the thoughts and knowledge of the pupils throughout the world.

Again, another method: Please bring to the next session a statement of what was on your breakfast, dinner, and supper table yesterday, including the cloth, the crockery, the table ware, and every article of food or beverage. These being listed, put the questions, "Where did that table cloth come from? What was it made of? Whence came the spices,

the salt, the sugar, the grain, the tea, the coffee, the meats, and everything else upon the tables? How did all these things get upon your table? Who brought them from every corner of the globe? What was the power by which your family set in motion the whole machinery of commerce, of banking, of transportation, to bring to you your breakfast, dinner, and supper?" Answer, "The almighty dollar," provided it is a good dollar, which meets Cernuschi's definition—"That only is good money which is worth as much after the coin is melted or hammered smooth as it purported to be worth in the coin." To that measure of the dollar or dollars each head of a family can command, each family controls the services of all the merchants, tradesmen, bankers, steamship lines, railways, farmers, and manufacturers of the world. The only reason and motive for the existence of all these forces is to supply food, clothing, and shelter to the multitude. All that we get in or out of life in a material sense are our shelter, clothing, and food.

I think that text would develop some lessons in geography. Is not the right end to begin the one which is right at the hand of every youth in the land? Work backward from a single fact relating to any substance, and one may develop, as I did in untwisting the strand of cotton, the geography, geology, climatology, and the chemistry of the soils and conditions of the globe.

THE ZIEGLER POLAR EXPEDITION

MR WILLIAM ZIEGLER is sending north this summer a large party to carry supplies to the Ziegler Polar Expedition. The party will sail from Norway about July 1 on board the *Terra Nova*, a powerful whaling vessel which Mr Ziegler recently purchased for this purpose. Mr W. S. Champ, the general manager of Mr Ziegler's Arctic expeditions, will be in charge. They will try to reach Franz Josef Land, where the Ziegler expedition is expected to meet them. In case the ice is as heavy as it was in 1904, Mr Champ will force the *Terra Nova* as far north as possible, and then allow the vessel to be frozen in. The party will then push across the ice to Franz Josef Land.

The Ziegler North Polar Expedition, which, it will be remembered, set out in 1903, is being made under the auspices of the National Geographic Society, whose personal representative, Mr W. J. Peters, is in charge of the scientific work and second in command. It was expected that the expedition would return in 1904, but the ice was so thick that they could neither get out nor could an auxiliary party reach them. They are abundantly supplied with provisions, and no anxiety is felt on that score.

Mr Ziegler will also send a representative on board the *Belgica*, which is to proceed about July 1 to Shannon Island, on the east coast of Greenland, to make sure that none of the party who made the polar dash have been carried there by the polar drift. Several years ago a large stock of provisions was established at this point in case the men making the polar dash were prevented by the drift from returning to Franz Josef Land and were landed on the Greenland coast.

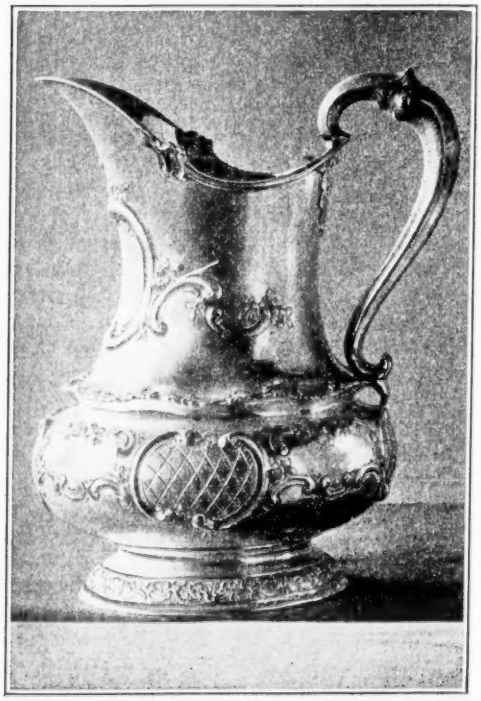
EIGHTH INTERNATIONAL GEOGRAPHIC CONGRESS

THE proceedings of the Eighth International Geographic Congress will appear in book form about September 1, forming a volume of about 800 pages. The work is to be published by the United States Government pursuant to the following resolution, which passed the Senate February 21 and the House of Representatives March 3:

Joint resolution (S. R. 109) to print the report of the Eighth International Geographic Congress.

Resolved, etc., That the Public Printer be authorized and directed to print the report of the Eighth International Geographic Congress, held in the United States in September, 1904, the edition to consist of the usual number for the use of the Senate and House of Representatives, and 1,500 copies to be bound for the use of the Eighth International Geographic Congress.

The work is being edited by the Publication Committee, consisting of Henry Gannett, chairman; James Page, and Gilbert H. Grosvenor. All the papers which were presented to the Congress, some 220 in all, will be included, so that the work will be one of the most notable contributions to geographic science that has appeared for some time. A copy of the volume will be sent to every member of the Congress.



On the conclusion of the Eighth International Geographic Congress excursion to Mexico the members of the excursion, wishing to show their appreciation of the many courtesies, time, and trouble freely given by Dr David T. Day, chairman of the Excursion Committee, subscribed to a handsome silver pitcher as a testimonial of their gratitude. The pitcher, designed by Tiffany & Co., has just been completed and was recently presented to Dr Day. A picture of the pitcher is given here in order that the many friends who joined in the presentation and who are now scattered over the five continents may see how their wish has been realized. The seal of the Congress and an appropriate inscription have been engraved on the pitcher.

GEOGRAPHIC LITERATURE

Through Town and Jungle. Fourteen thousand miles awheel among the temples and people of the Indian Plain. By William Hunter Workman and Fanny Bullock Workman. 8vo. Pp. 24 + 380. Map and 202 illustrations. New York: Chas. Scribner's Sons. 1904.

This is a narrative, in journal form, of extended travels in India, mainly by bicycle, the chief purpose being a study of the architectural remains. The greater part of five years was occupied in these wanderings, during which time the authors covered India from the Vale of Kashmir to Cape Cormorin, besides visiting Burma and Ceylon. The narrative is well told and is of great interest, as much concerning the peoples, their home life and industries, is scattered about with the story of bad roads, bad food, and bad beds in Dak bungalows. But the chief interest of the book is in the illustrations. There are fine reproductions of most excellent photographs of the wonderful architecture of the past, created by peoples now gone or degenerate. H. G.

The Story of the Kongo Free State. By Henry Wellington Wack. 8vo. Pp. 15 + 634. Illustrated. New York and London: G. P. Putnam's Sons. 1905.

This is a history of the Kongo State, drawn largely from documents in the possession of the Belgian government, and is intended as a defense of the administration of the state against the attacks of the English press. Whatever be the merits of the controversy, the book is of great interest and value as a summary of the history of this most remarkable experiment in empire-building. Certain it is that with the restriction of liquor dealing and the abolition of the slave trade, both of which are due to the government of the Kongo Free State, the condition of the native races is immeasurably improved. Add to these the start which has been made in educating them and in training them to habits of industry, and the existence of the state is amply justified.

H. G.

Breaking the Wilderness. By F. S. Dellenbaugh. 8vo Pp. 23 + 360. Illustrated. New York and London: G. P. Putnam's Sons. 1905.

The purpose of this book is stated by the author in the preface to be "to present a review in chronological order of the important events which contributed to breaking the wilderness that so long lay untamed west of the Mississippi." Some fifty pages are devoted to the beaver and the buffalo on the plea that they induced exploration and settlement. There is nothing said, however, of mines of the precious metals, which of all attractions were far the most potent. Fifty more pages are devoted to the Indians, though why they should appear in this connection, except incidentally, is not apparent.

The remainder of the book is occupied with accounts of certain exploring expeditions, beginning with the lies of Cabeza de Vaca and including Coronado's expedition and other early Spanish explorations. Of those of more recent time accounts are given of the Lewis and Clarke, Pike, the Astor expeditions, Bonneville, Long, Fremont, and numerous hunters and trappers, finally closing with the well-known narrative of Powell's exploration of the Colorado. There is in the book scarcely an allusion to the numerous exploring expeditions carried on by the army since 1850. Even that magnificent series of explorations known as the Pacific Railroad surveys, from which our first map of the West was built up, is conspicuous by its absence. In later years the Survey of the Fortieth Parallel, the Hayden Survey, and the Wheeler Survey, which were contemporaneous with the Powell exploration of the Colorado, and certainly as fruitful in results, are not mentioned. The history of exploration of the West is yet to be written.

This book is printed on heavy paper, and is finely illustrated with half-tones, but the pictures should, if the book reaches a second edition, be redistributed. At present they bear no relation to the adjacent text, but have apparently been thrown in haphazard.

H. G.

NATIONAL GEOGRAPHIC SOCIETY

POPULAR MEETINGS

National Rifles' Armory, 920 G street, 8 p. m.

April 14. — "Fighting the Boll Weevil." Dr L. O. Howard, Chief of the Bureau of Entomology. Illustrated.

April 28.—"Niagara Falls." Dr G. K. Gilbert, of the U. S. Geological Survey. Illustrated.

May 5.—"The Philippines." The Secretary of War, Hon. Wm. H. Taft.

May 13.—The Annual Long Distance Excursion of the Washington members of the National Geographic Society, probably to Indian Head.

SCIENTIFIC MEETINGS

Hubbard Memorial Hall, 8 p. m.

April 7.—"Forestry." Messrs Gifford Pinchot, Overton W. Price, and members of the Bureau of Forestry.

April 21.—"Along the Labrador Coast." Wilfred T. Grenfell.

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